

Naval Oceanographic Office

Stennis Space Technical Report
Center TR 300
MS 39522-5001 December 1989

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SEISMIC REFLECTION PROFIL

USNS WILKES 1977-1979

William J. Vestal
William P. Searcy III
Geoacoustics Branch

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TR 300

FILES — SOMALI BASIN

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1977-1979

William J. Vestal
William P. Searcy III
Geoacoustics Branch

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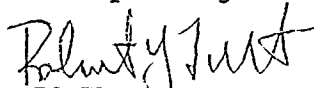
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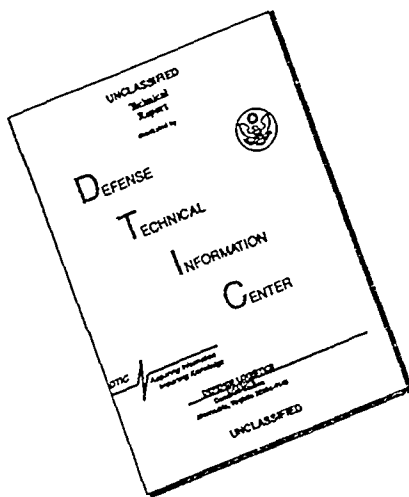
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Naval Oceanography Command

FOREWORD

During the period 1977 to 1979, the USNS WILKES recorded some 20,000 miles of seismic data in the Somali Basin. Reduced-scale sections of most of the 10-second analogs are reproduced in this report as an aid to future research and planning.


ROBERT Y. FELT
Captain, U.S. Navy
Acting

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The Somali Basin and contiguous sedimentary basins comprise an inverted L-shaped area of about 1,300,000 square miles in the western Indian Ocean, bounded by the African coasts of Somalia, Kenya, and Tanzania on the west, the Carlsberg Ridge on the north and east, and the northwest coast of the Malagasi Republic (Madagascar) and the Amirante Ridge-trench complex on the south-west.

During the period 1977 to 1979, the USNS WILKES collected over 20,000 miles of reflection seismic data in the Somali Basin,

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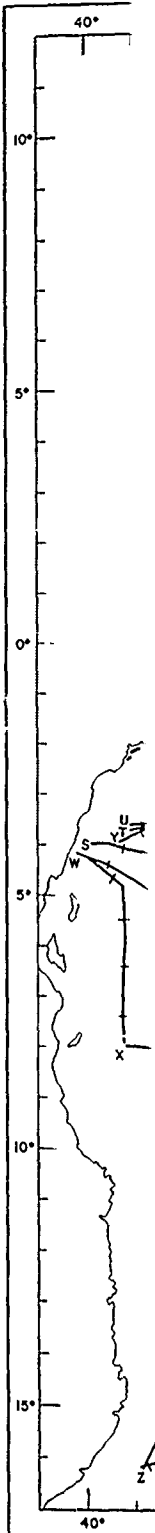
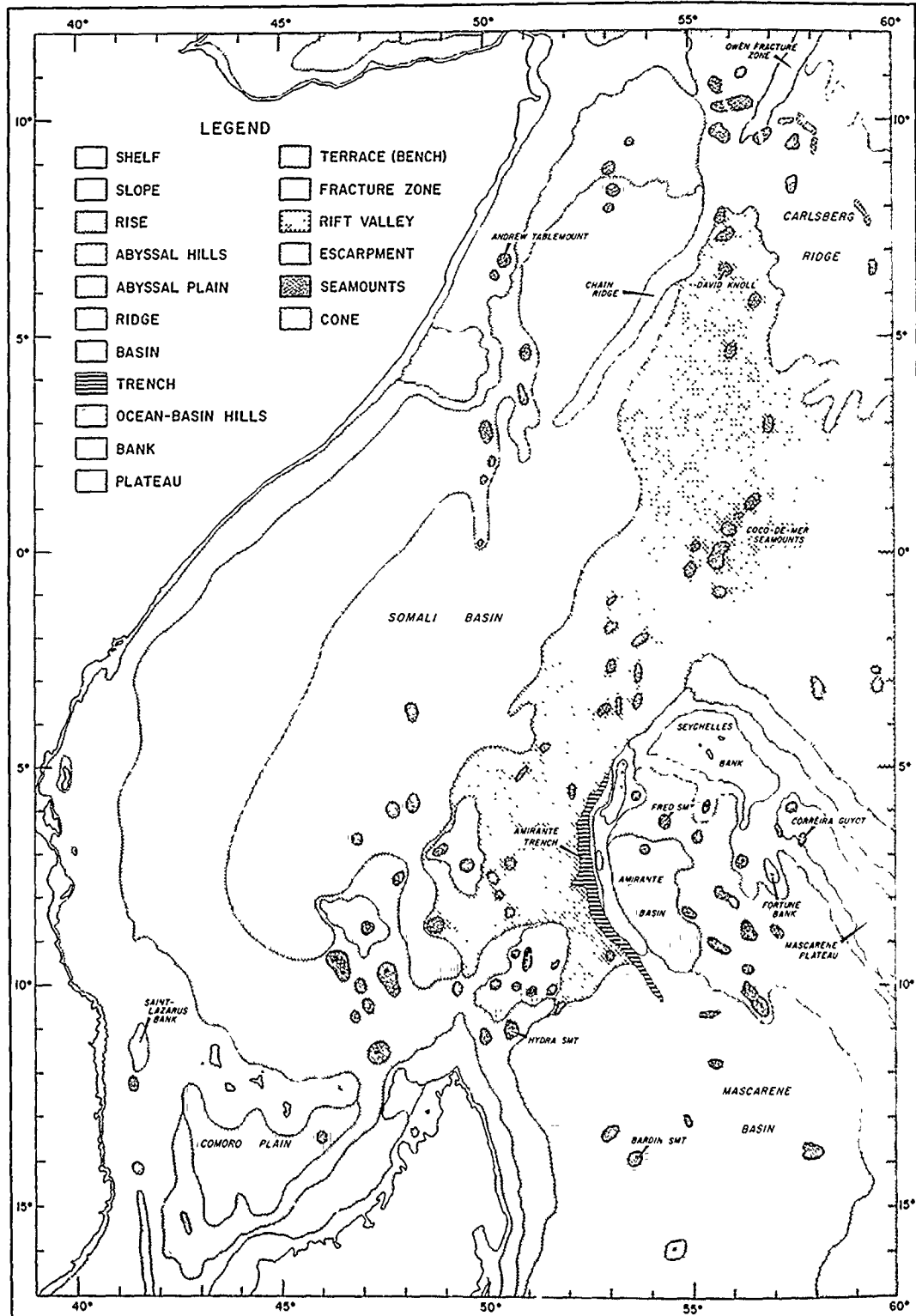


Figure 1. Physiographic Provinces of the Somali Basin.

basins comprise
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dge on the north
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ex on the south-

along with bathymetry, magnetics, and other data. Photographic reproductions of much of the ten-second seismic analogs are reproduced in this volume. Emphasis has been placed on data in the main part of the basin where survey tracks were concentrated.

This report is not intended as an interpretive study. It is hoped that the reduced-scale seismic sections will be a convenient format for future geological studies.

WILKES collected
the Somali Basin,

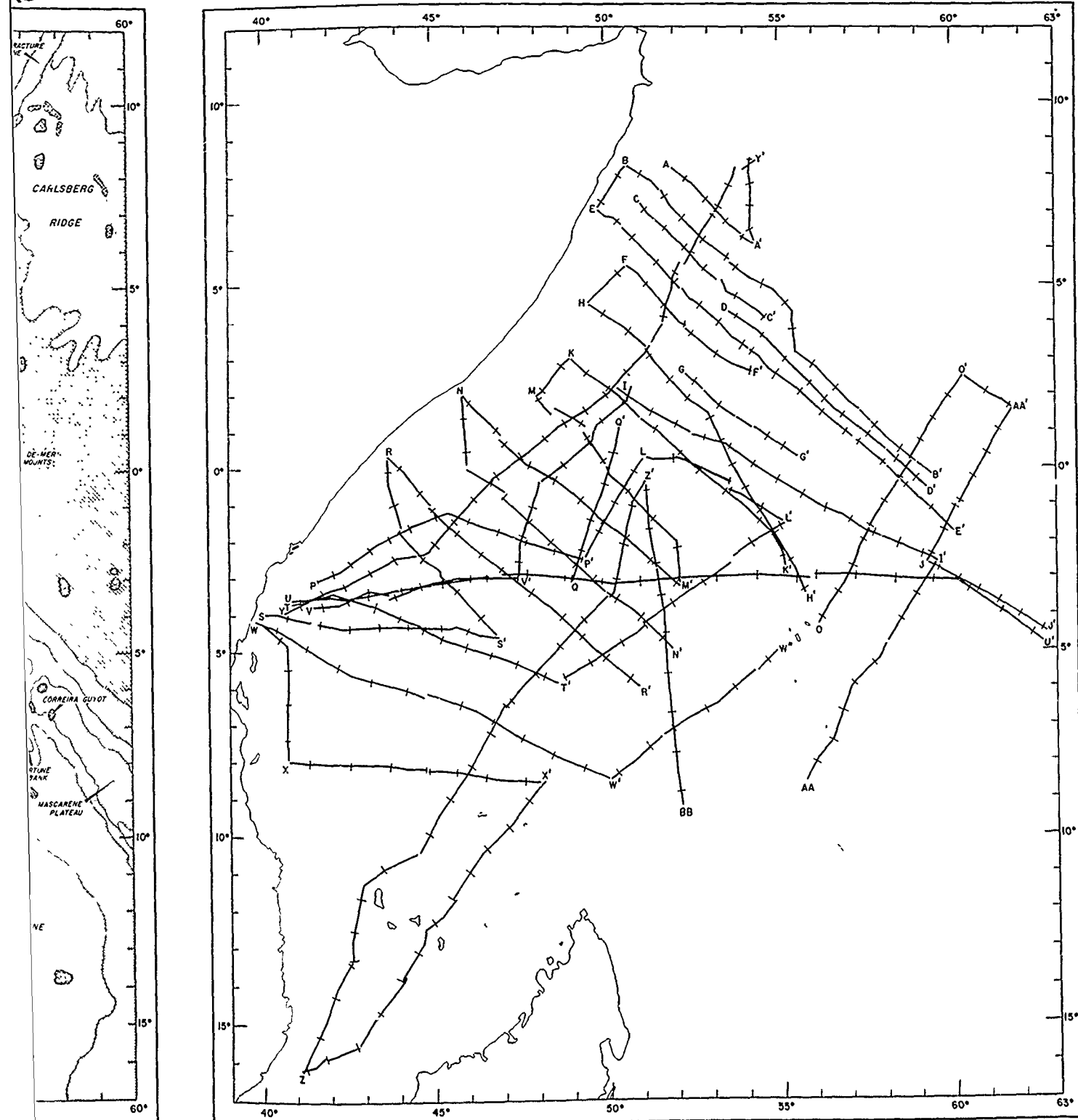


Figure 2. Track Chart, USNS Wilkes—Somali Basin, 1977-1979.

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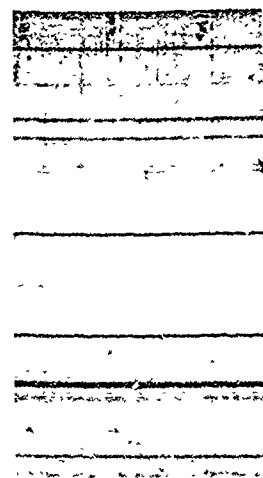
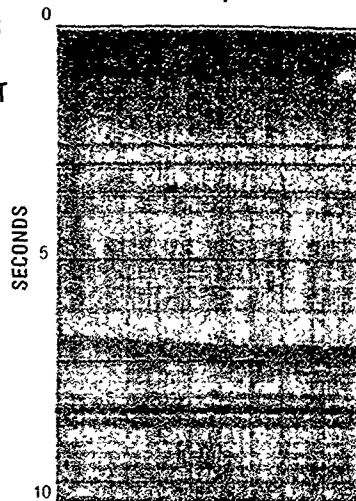
A

JD 265 1979
0919Z
08°10.8' N
051°57.8' E

1200Z
126° →

CRUISE 343916

AFRICAN COAST
± 95 NM



B

JD 317 1979
1500Z
08°17.0' N
050°39.3' E

1800Z
122° →

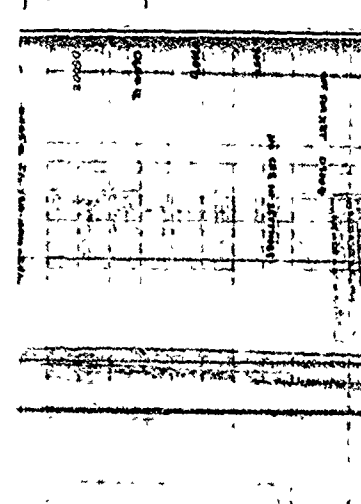
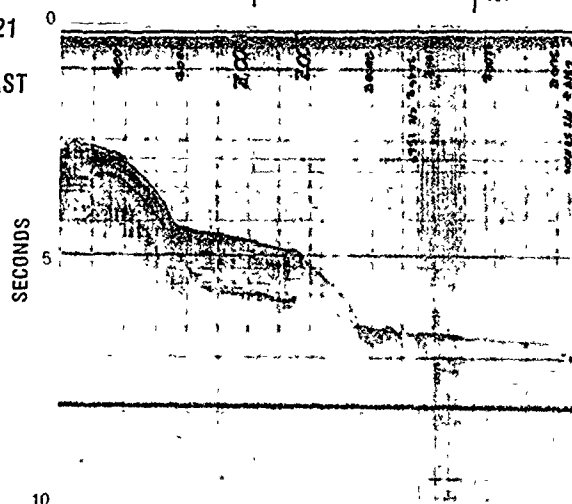
c/c
137° →

c/c
151° →

c/c
136° →

CRUISE 343921

AFRICAN COAST
± 28 NM



C

JD 264 1979
1605Z
06°57.3' N
051°15.8' E

1200Z
308° →

0600Z

CRUISE 343916

AFRICAN COAST
± 98 NM

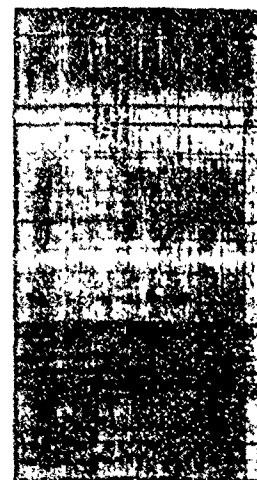
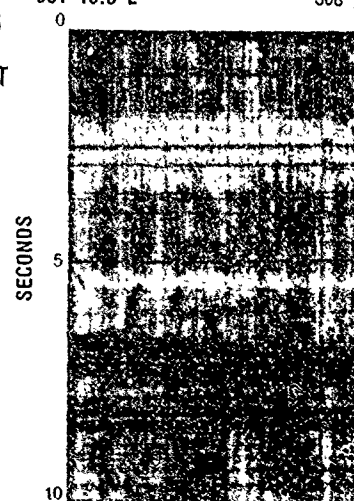


PLATE 1A

A'

JD 266 1979
1903Z
06°39.9' N
054°10.4' E

1800Z

JD 266

c/c 1200Z
117°

CHAIN RIDGE

c/c 136°

1800Z

c/c 124°

JD 318

C'

JD 263 1979
1156Z
04°42.1' N
053°45.5' E

0600Z

JD 264

c/c 320°

← 300°

12 c/c
18°

1200Z

c/c

137° →

1800Z

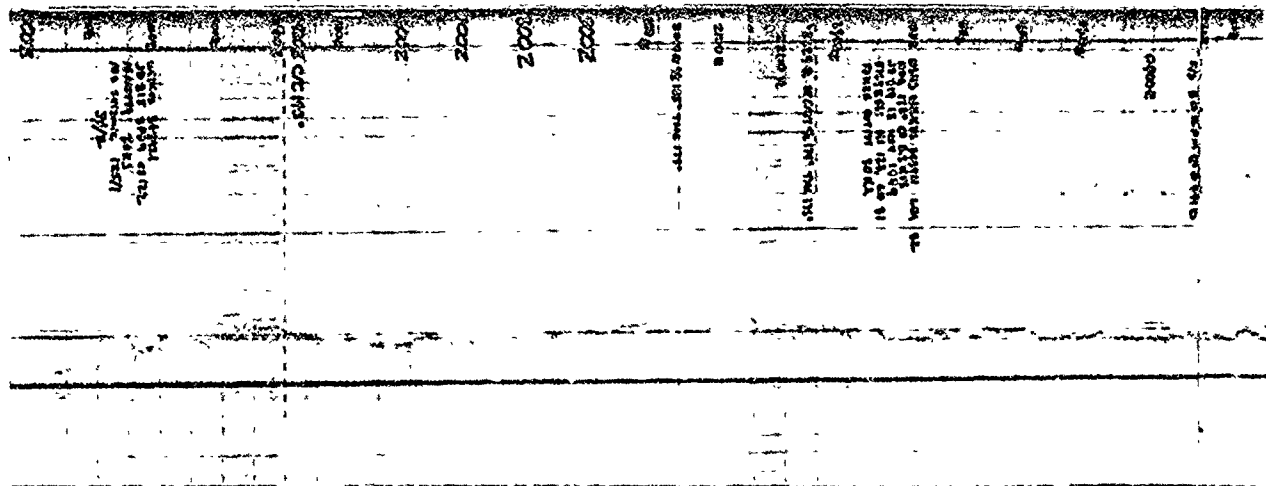
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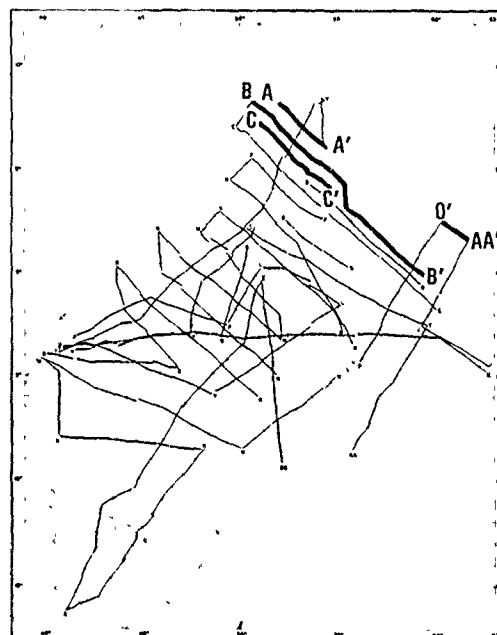
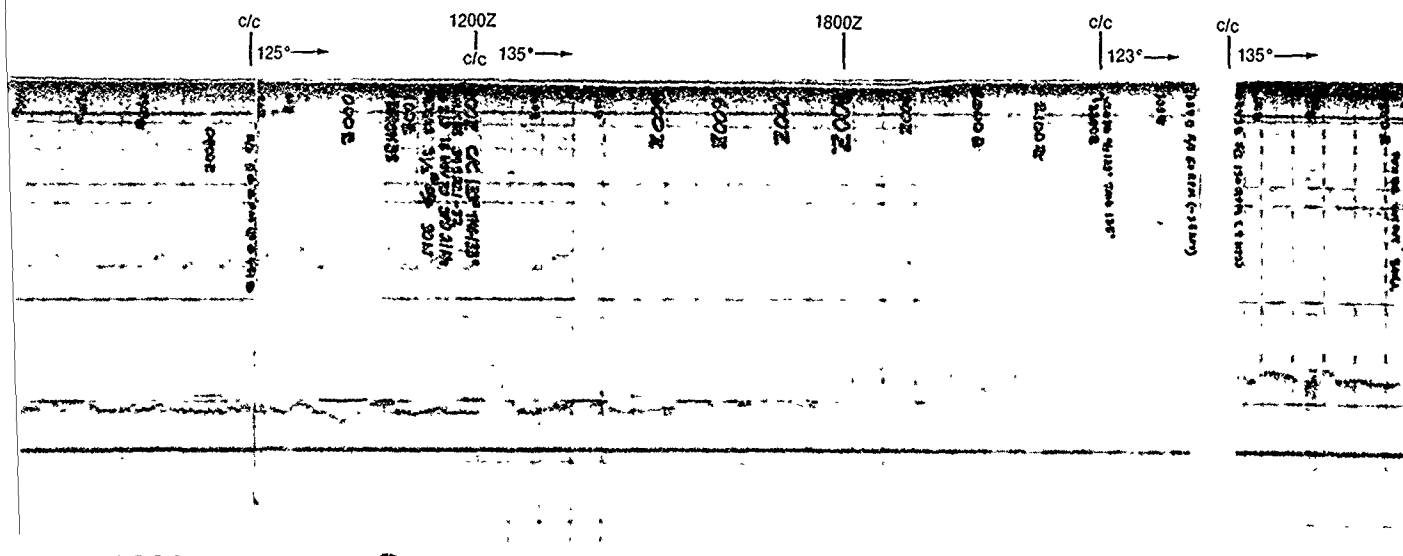
185° →

JD 319

c/c

125° →

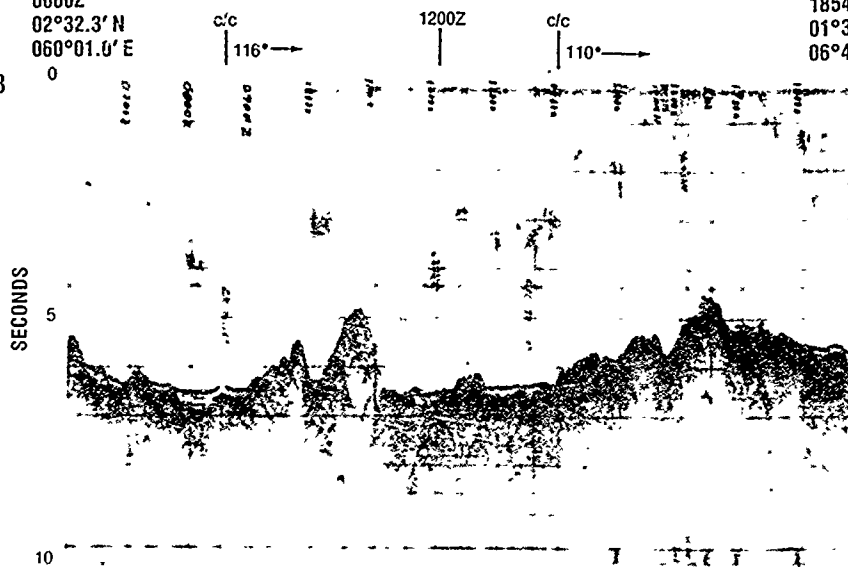




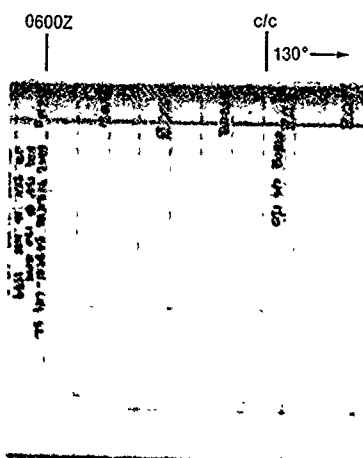
INDEX CHART (PLATES 1A, 1B, 1C)

0'
 JD 225 1977
 0600Z
 02°32.3' N
 060°01.0' E
 0

CRUISE 343728



AA'
 JD 225 197
 1854Z
 01°36.3' N
 06°42.2' E



B'
 JD 320 1979
 2318Z
 00°09.7' S
 059°23.7' E

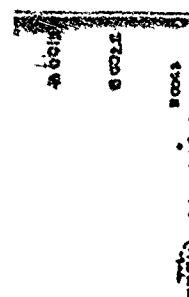
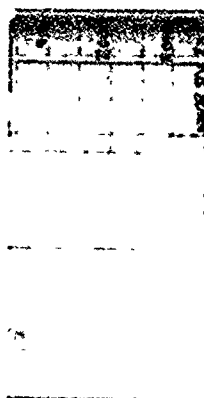


PLATE 1C

AA'

JD 225 1977

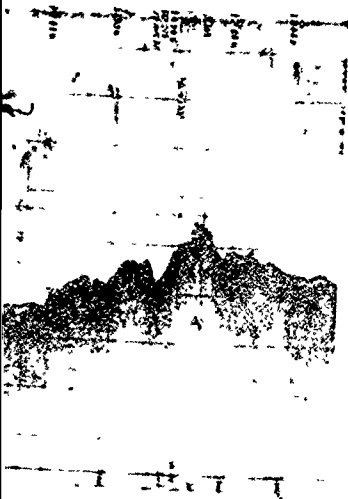
1854Z

01°36.3' N

06°42.2' E

c/c

110° →



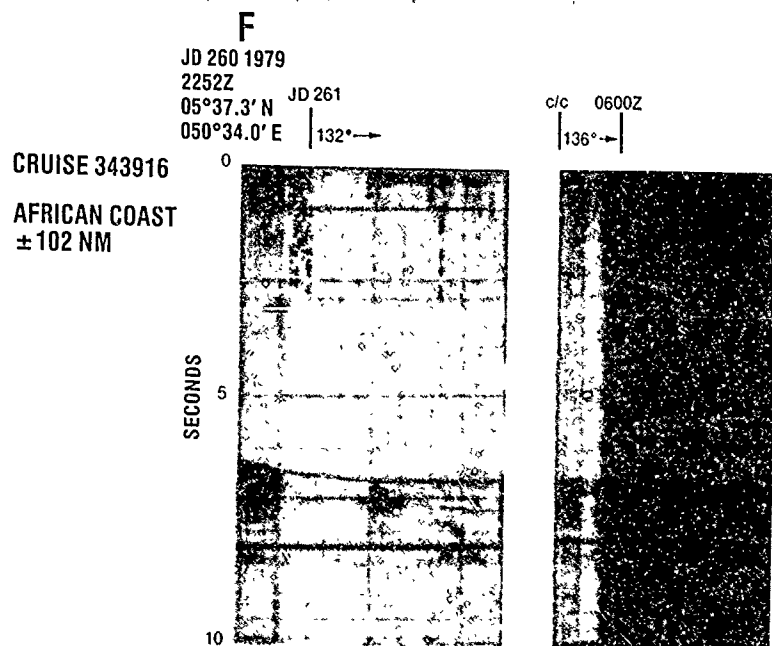
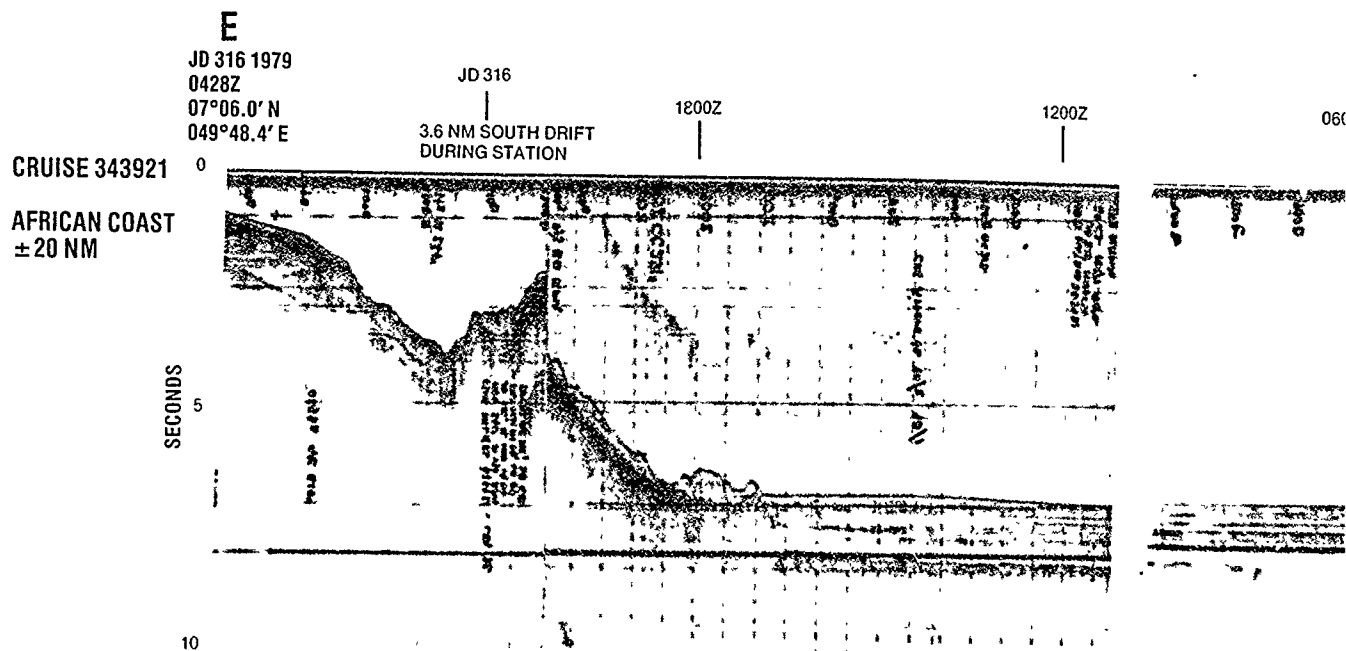


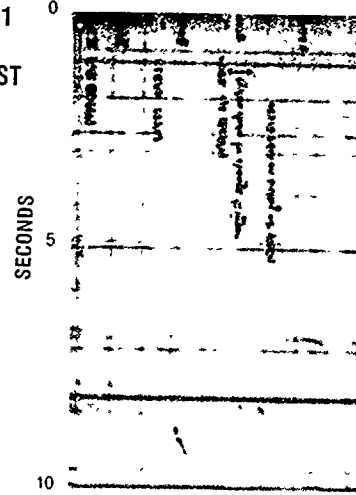
PLATE 2A

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JD 323 1979
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04°12.1' N
053°45.2' E

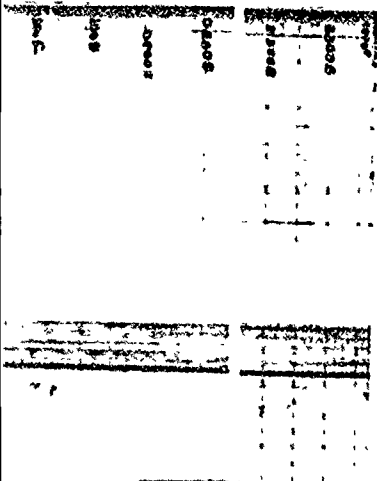
CRUISE 343921

AFRICAN COAST
± 300 NM

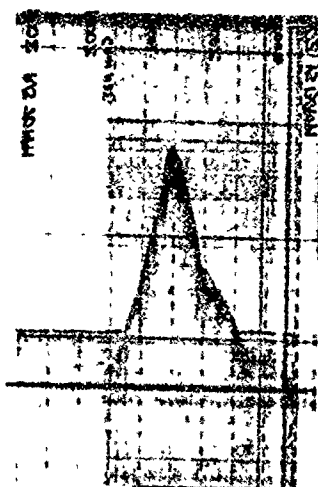


CHAIN RIDGE

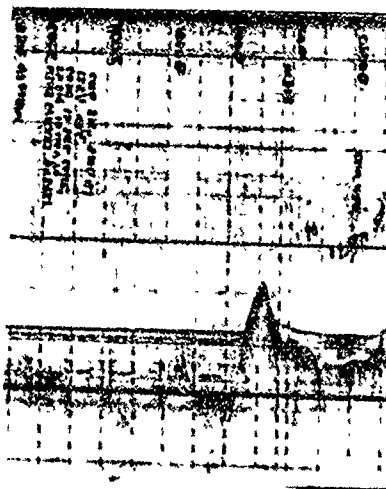
0600Z c/c
← 316°



1800Z o/c
← 312°



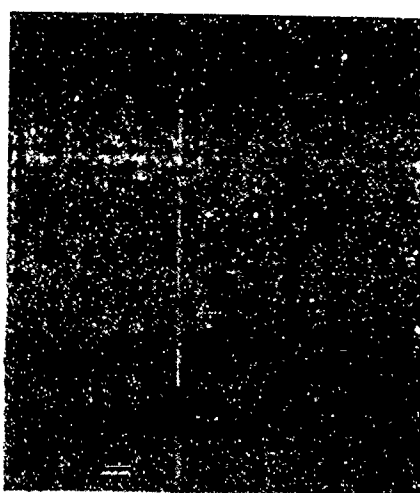
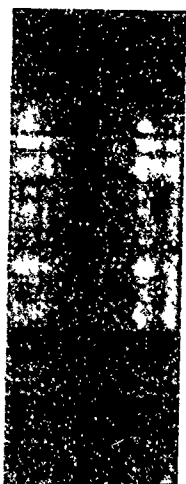
1200Z



c/c 1200Z
140° →



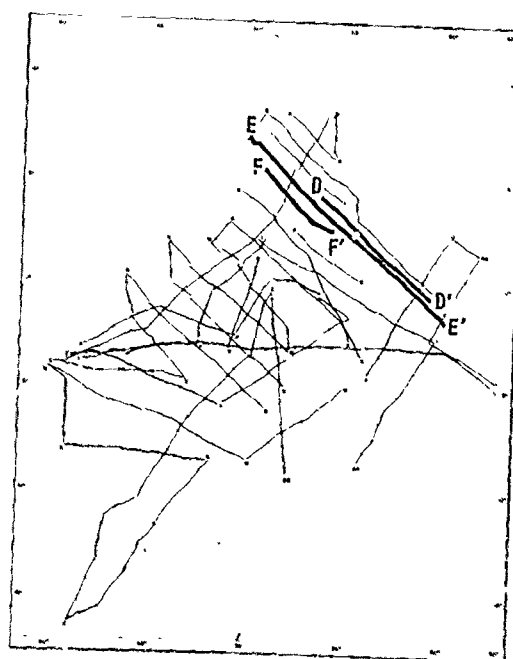
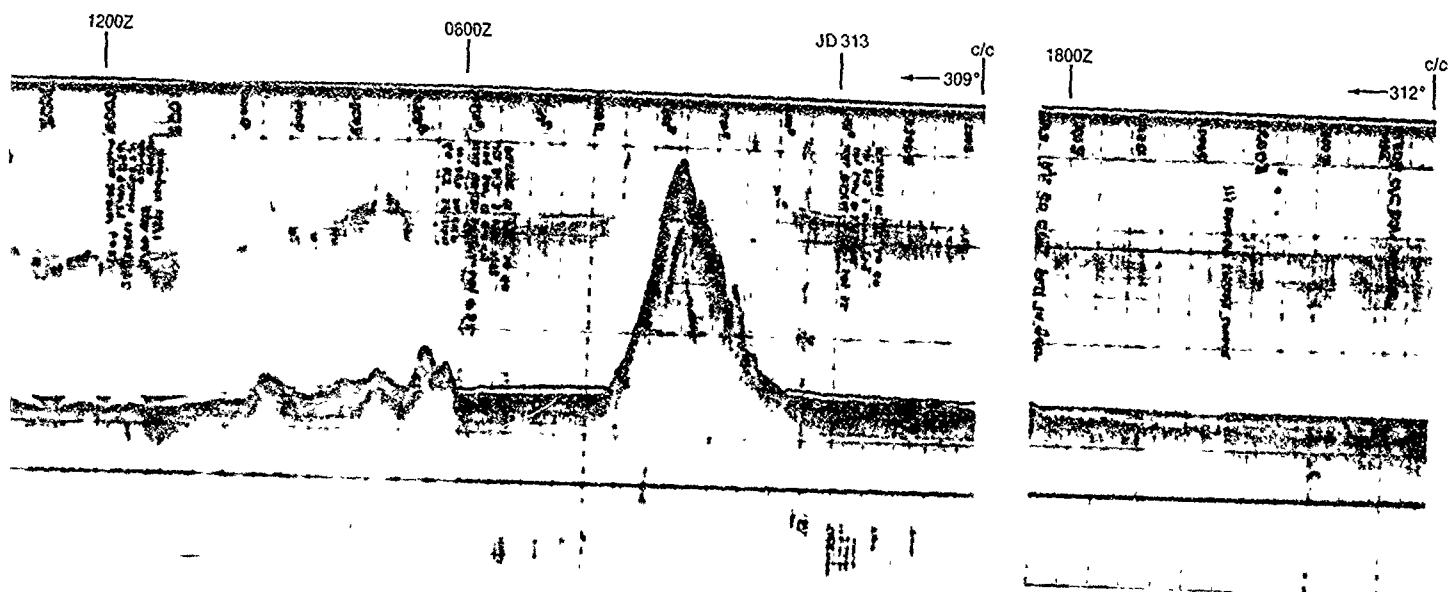
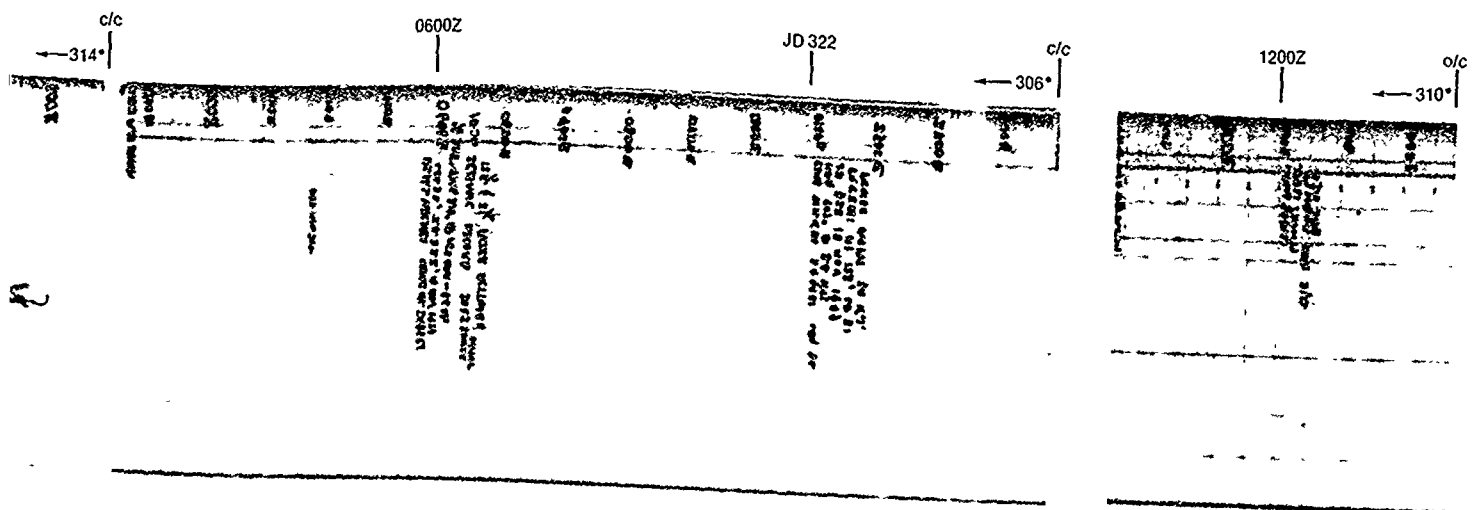
c/c JD 262
118° → 132° →



c/c 0600Z
116° →



PLATE 2B



INDEX CHART (PLATES 2A, 2B, 2C)

D'

JD 321 1979

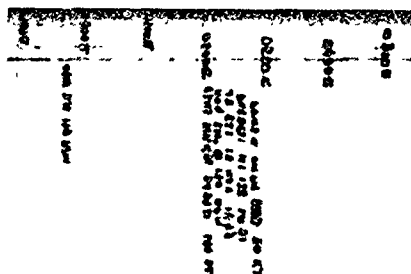
0220Z

00°33.4' S

059°15.5' E

0600Z

← 310°



E'

JD 311 1979

1812Z

01°40.5' S

059°58.2' E

1200Z

0600Z

JD 312

← 311°

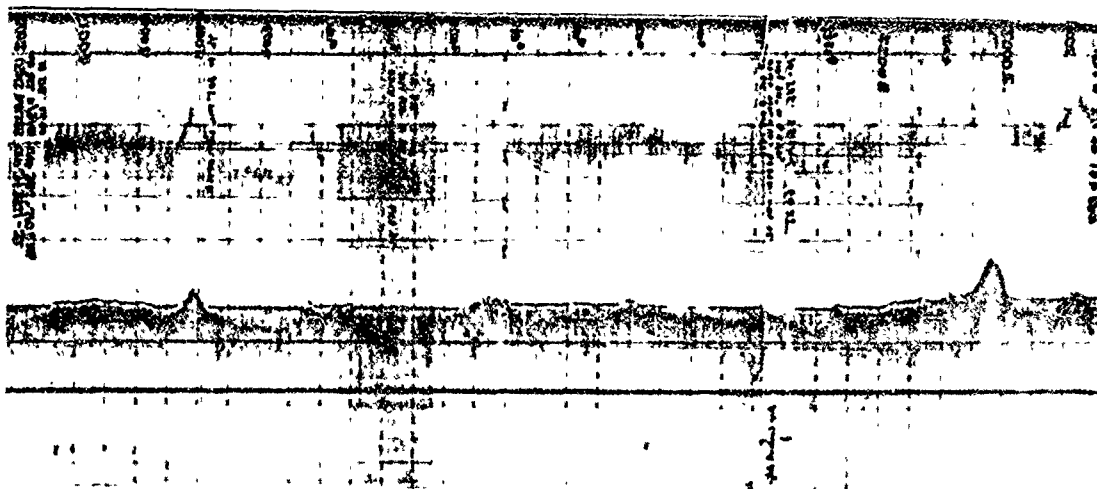


PLATE 2C

E'

JD 311 1979

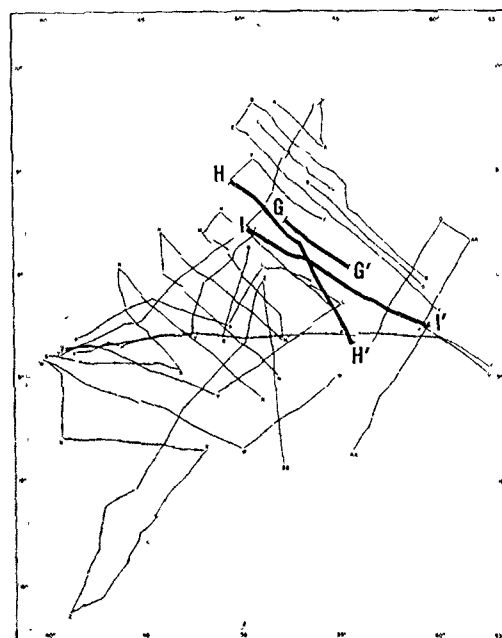
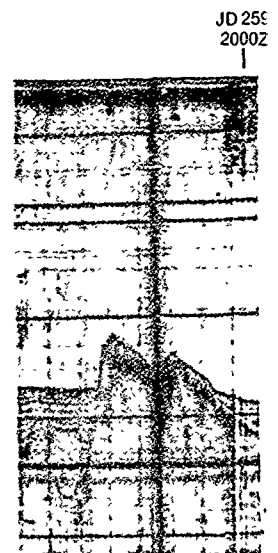
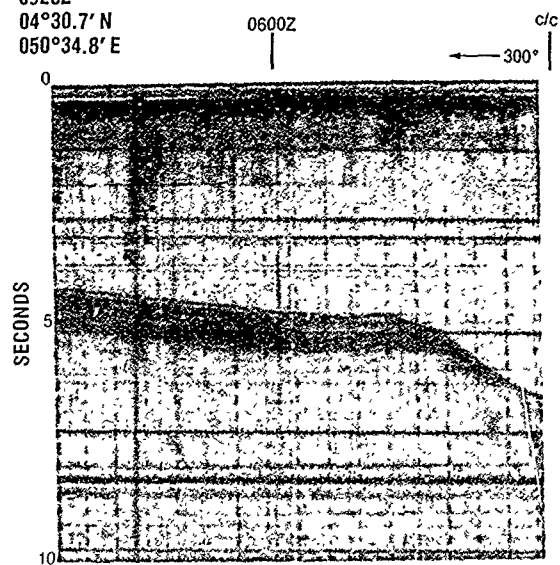
1812Z

01°40.5' S

11° 059°58.2' E



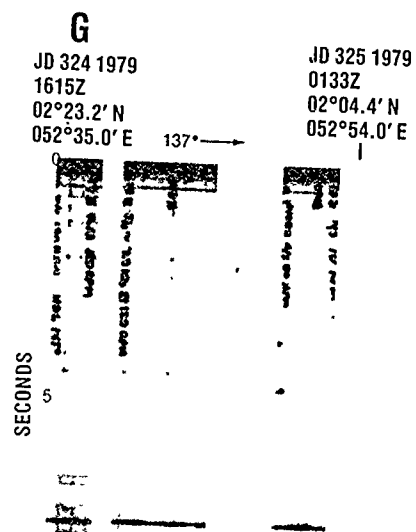
H
 JD 260 1979
 0928Z
 04°30.7' N
 050°34.8' E
 CRUISE 343916
 AFRICAN COAST
 ± 80 NM



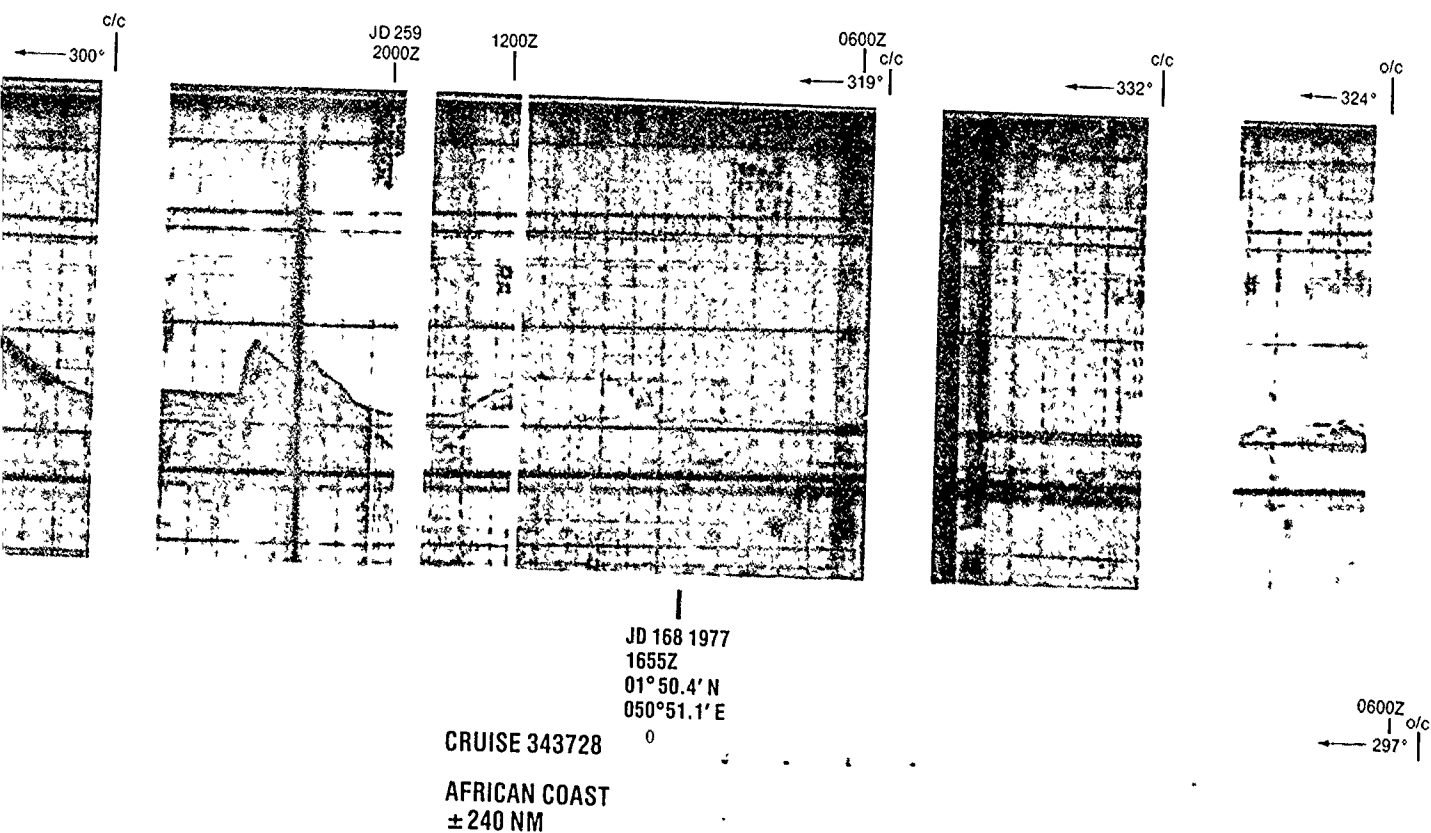
INDEX CHART (PLATES 3A, 3B, 3C)

PLATE 3A

CRUISE 343921



10

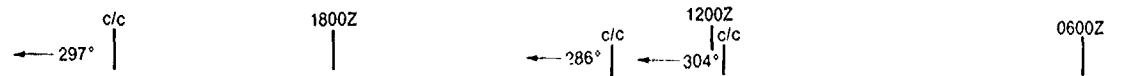
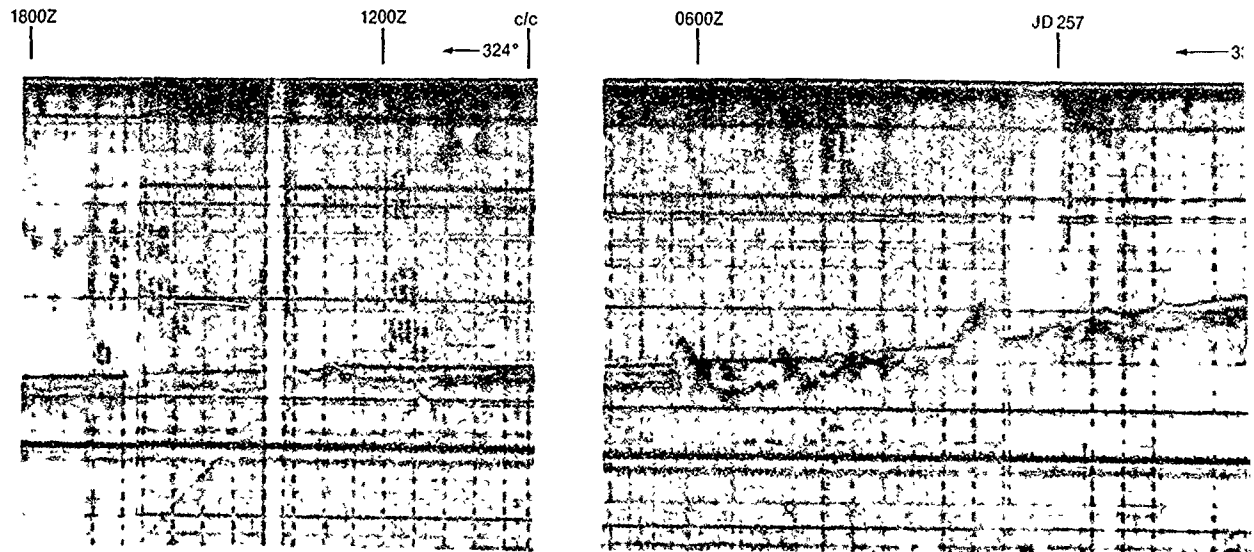
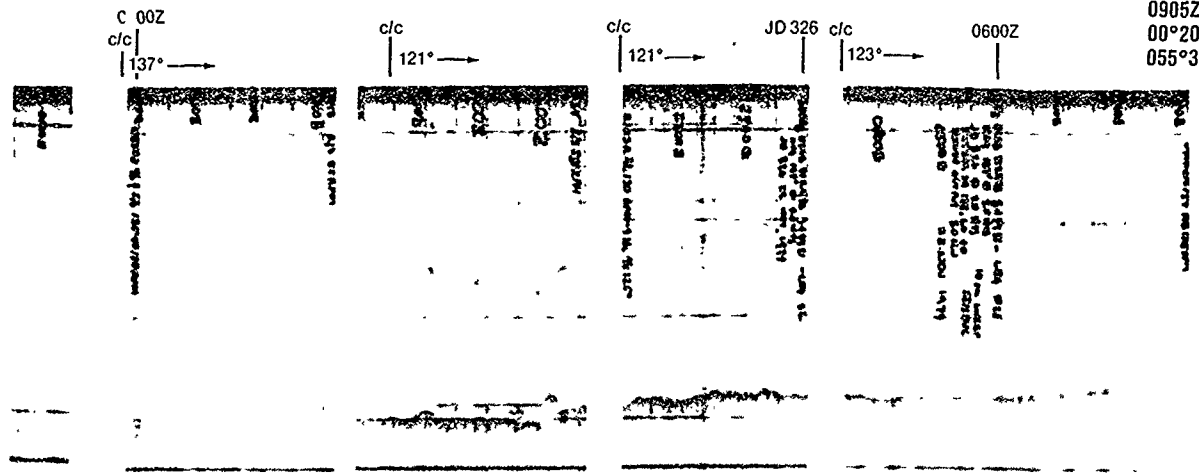


SECONDS

10

G'

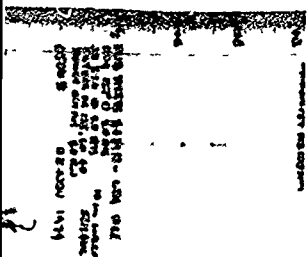
JD 326 19:
0905Z
00°20.2' N
055°30.8'



G'

JD 326 1979
0905Z
00°20.2' N
055°30.8' E

0600Z

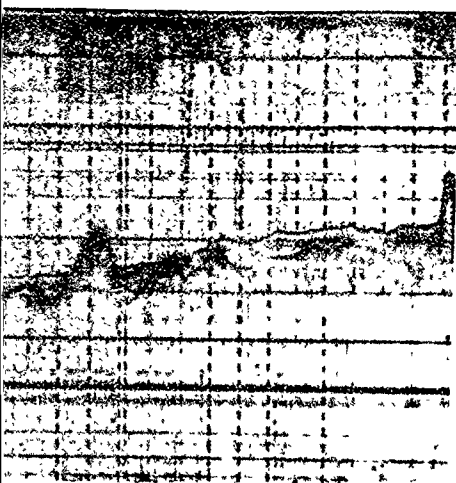


H'

JD 256 1979
1815Z
03°17.1' S
055°38.9' E

JD 257

← 331°



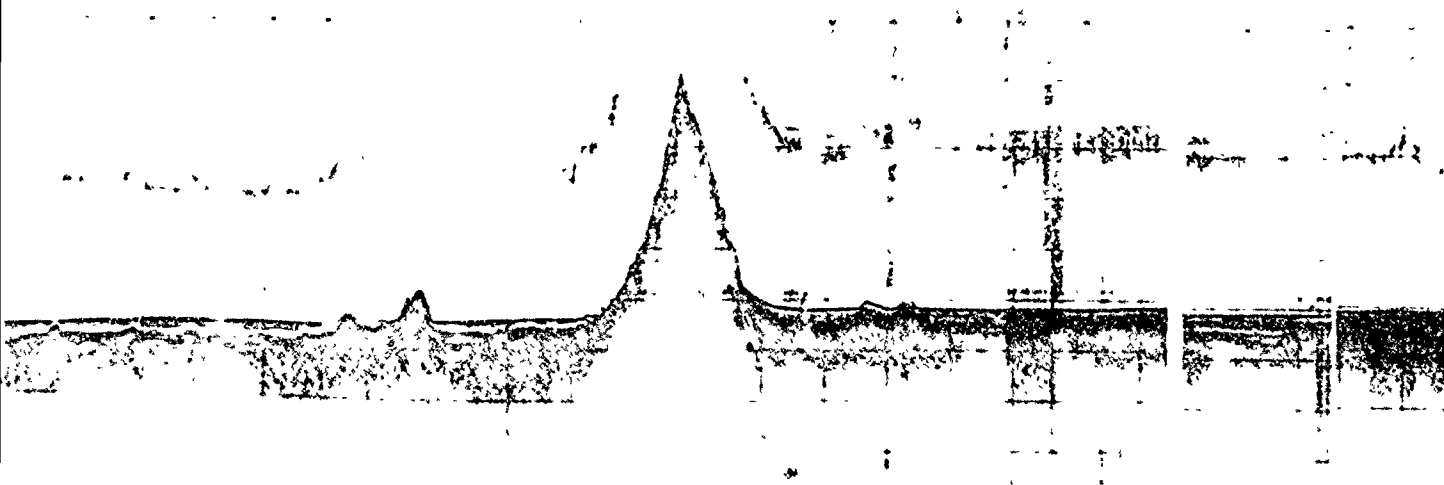
0600Z

JD 167

1800Z

c/c

← 299°



JD 166

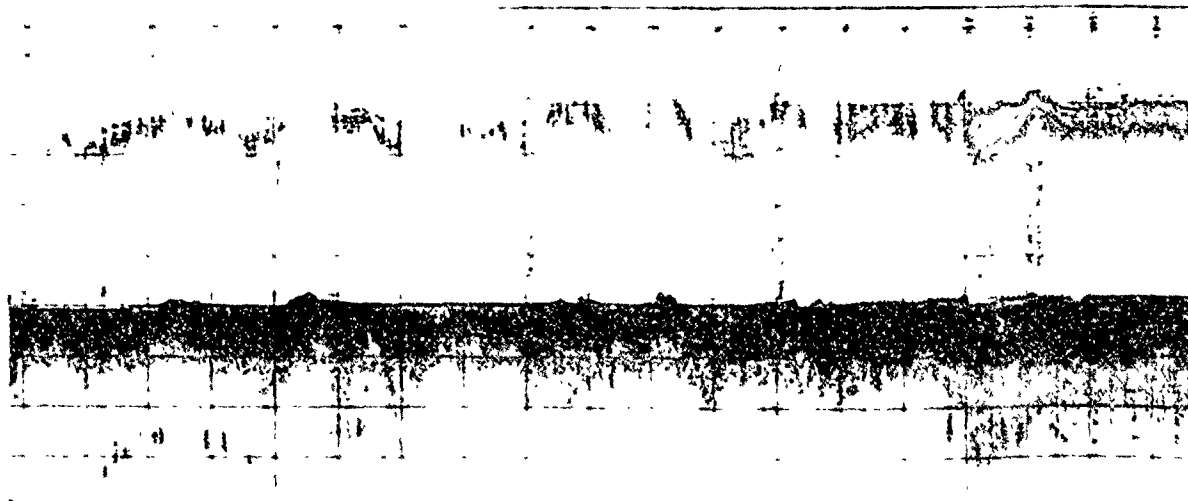
c/c

1800Z

1200Z

0600

← 296°

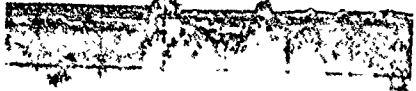
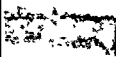


I'

JD 165 1977
0200Z
02°33.2 S
059°32.3' E

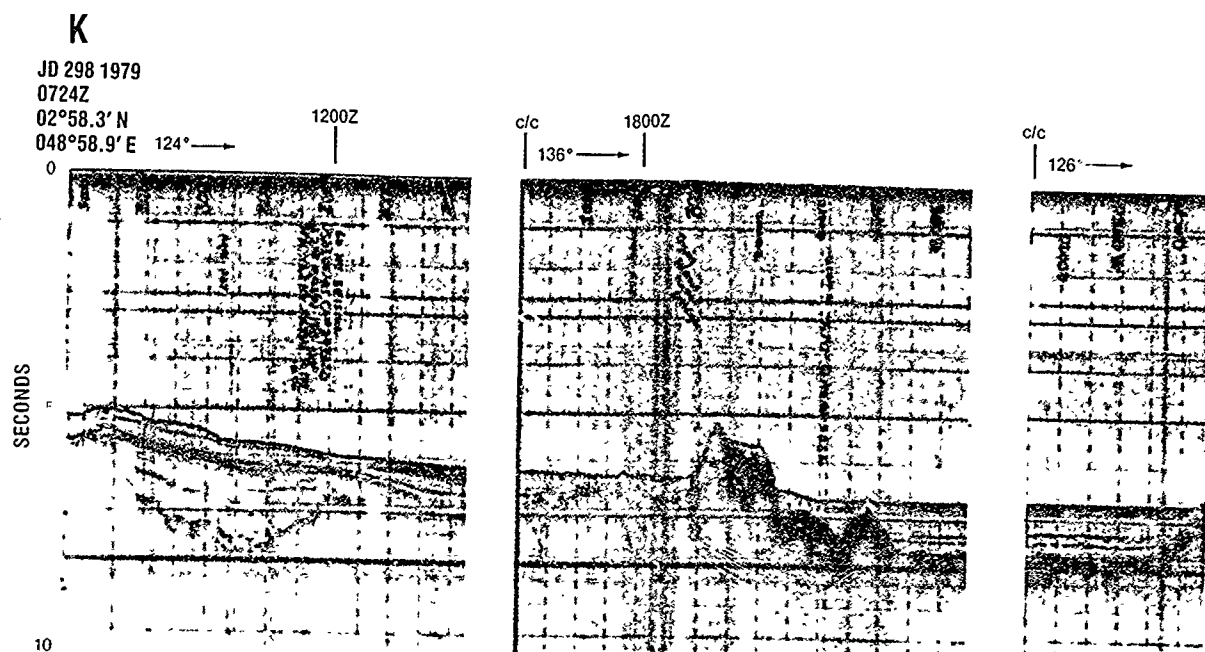
0600Z

← 292°



CRUISE 343920

AFRICAN COAST
± 100 NM



CRUISE 343920

AFRICAN COAST
± 105 NM

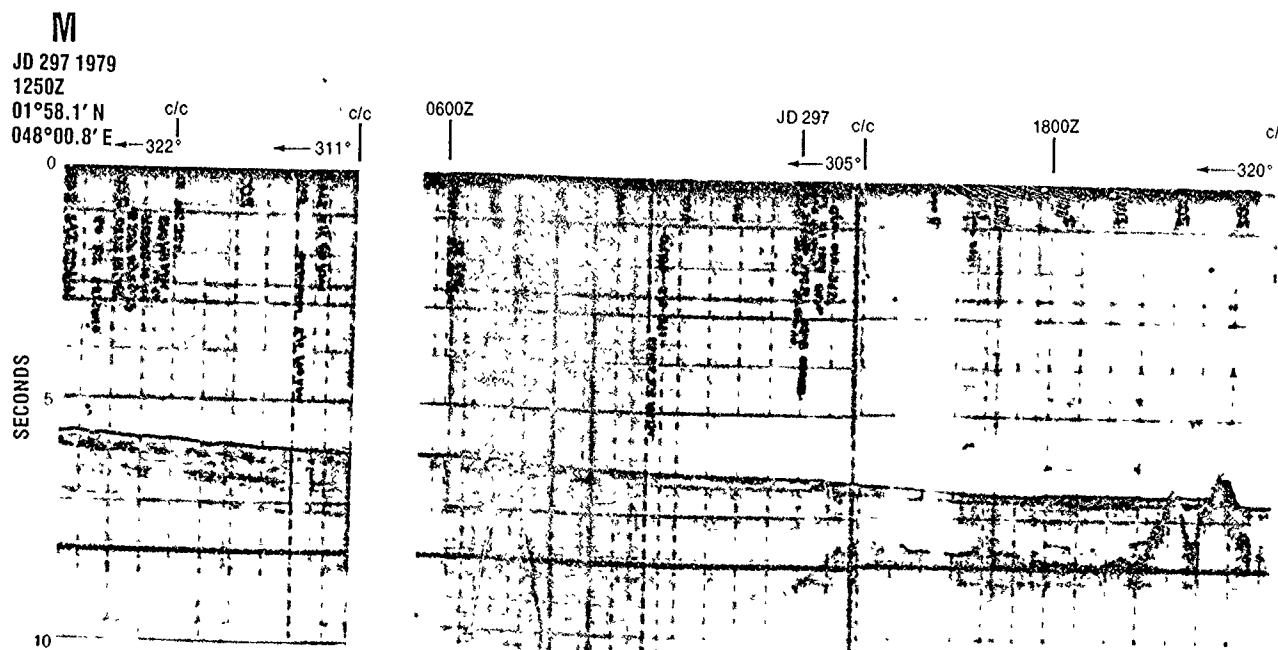
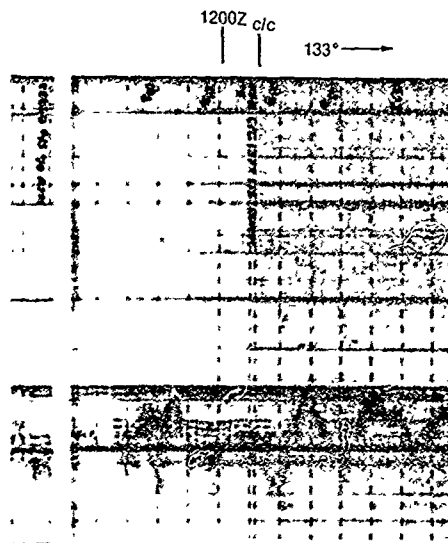
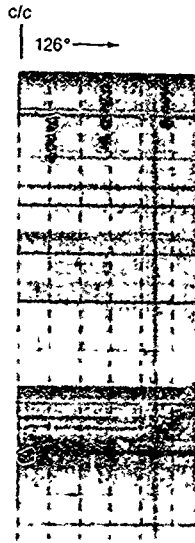
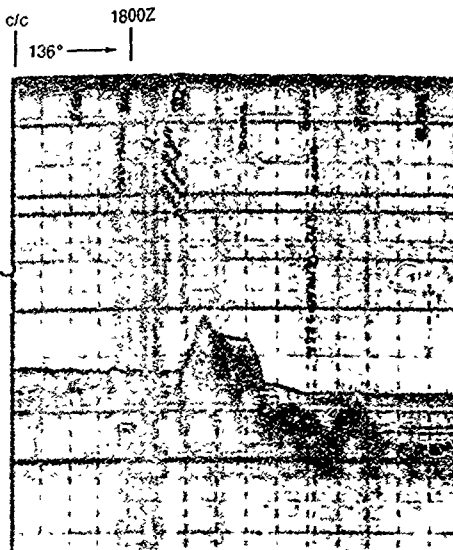
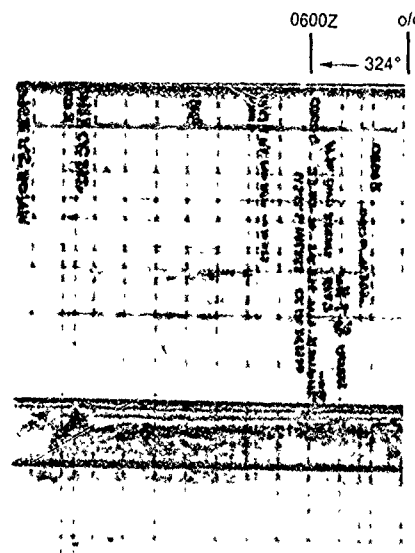
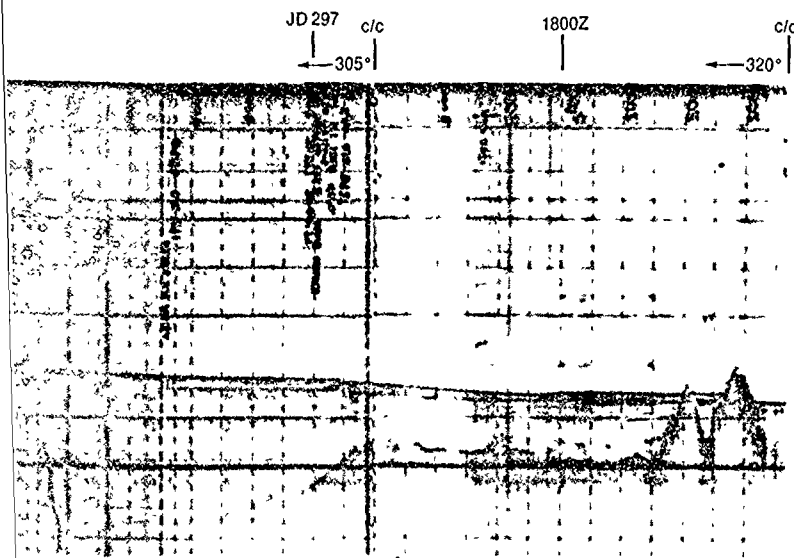
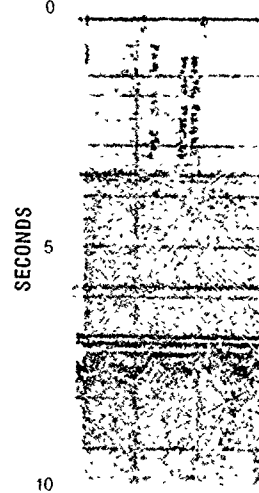


PLATE 4A



CRUISE 343728
AFRICAN COAST
± 320 NM

L
JD 202 1977
2148 Z
00°17.2'N
051°15.4' E



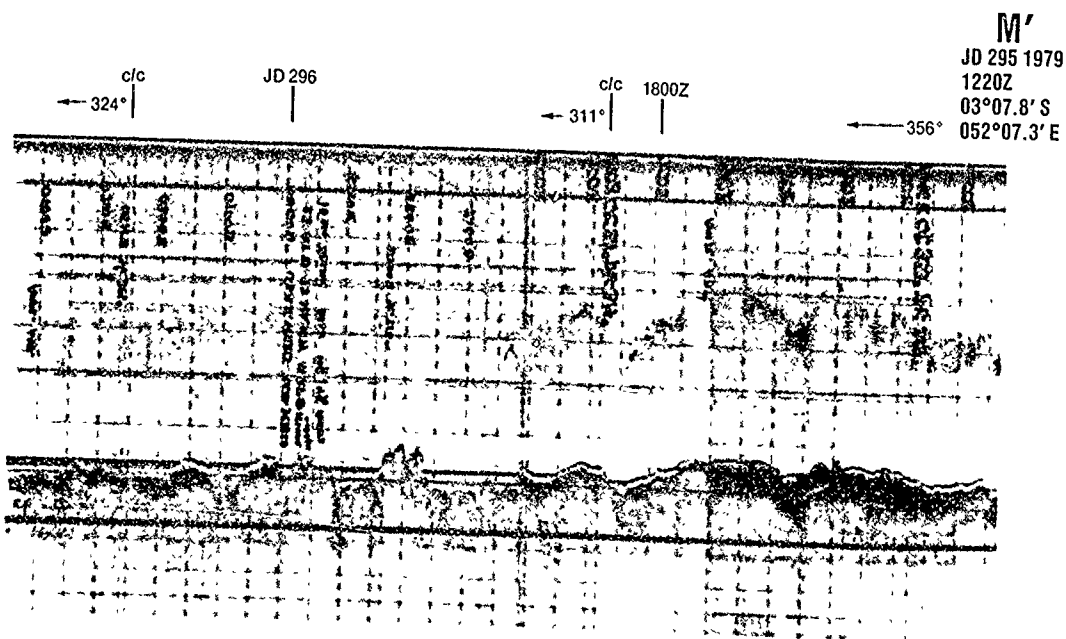
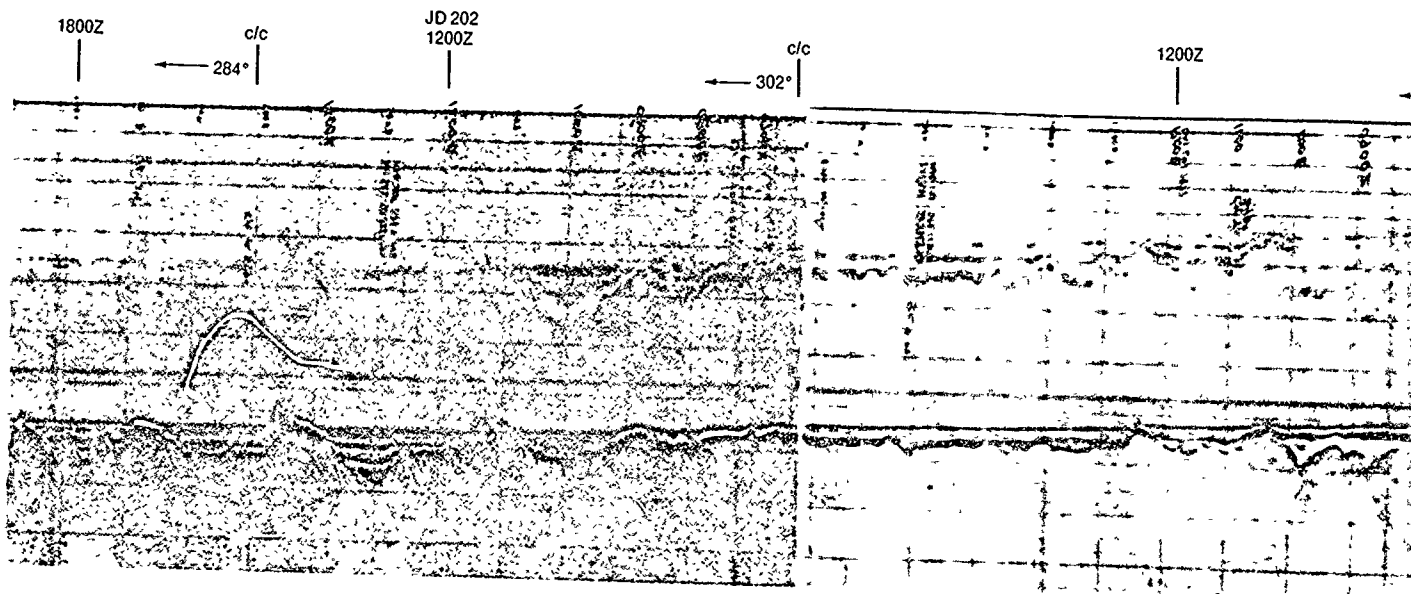
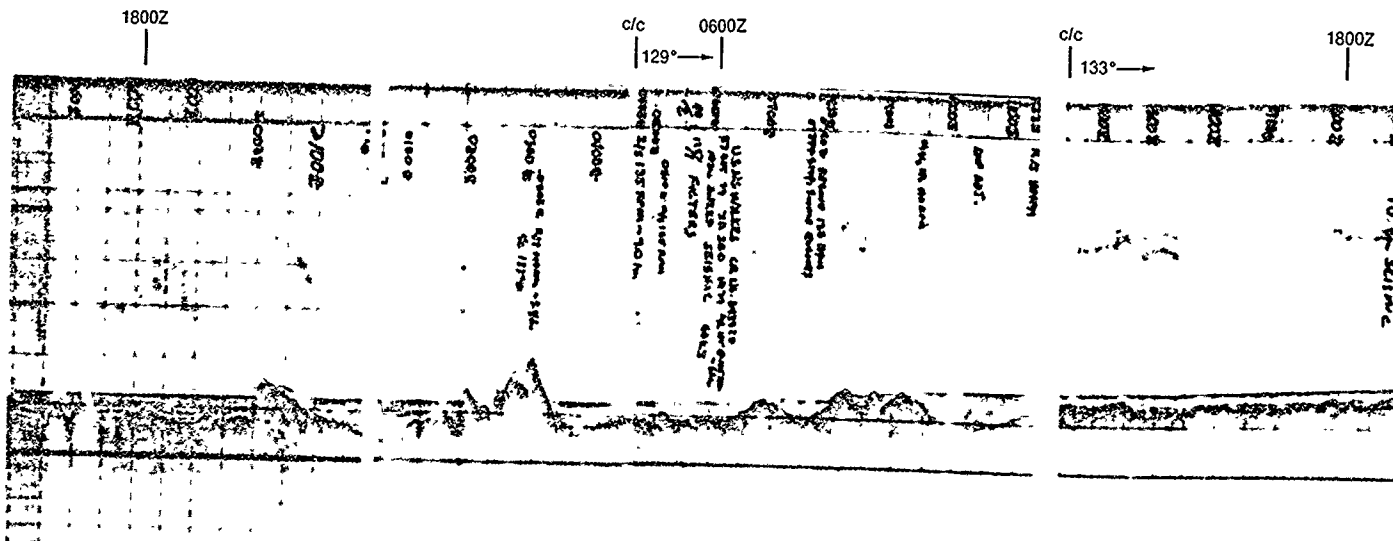


PLATE 4B

K'

JD 301 1979
1350Z
03°19.6' S
055°20.2' E

c/c
133°

1800Z

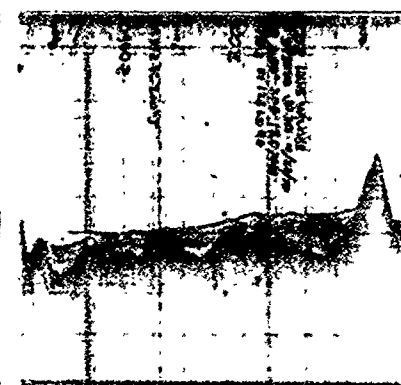
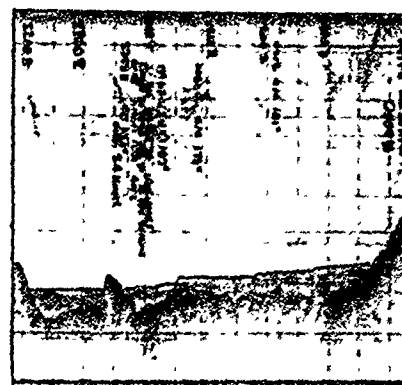
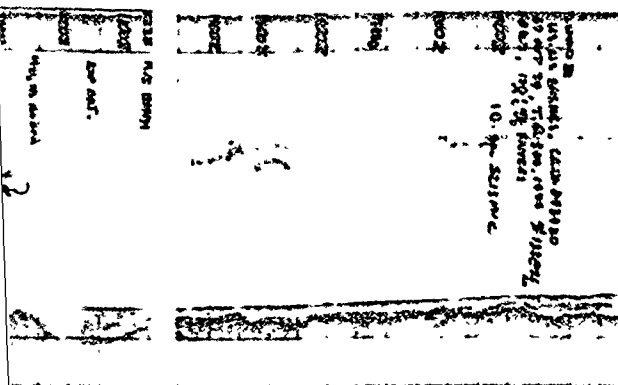
c/c
142°

JD 301

c/c
176°

c/c
193°

1200Z

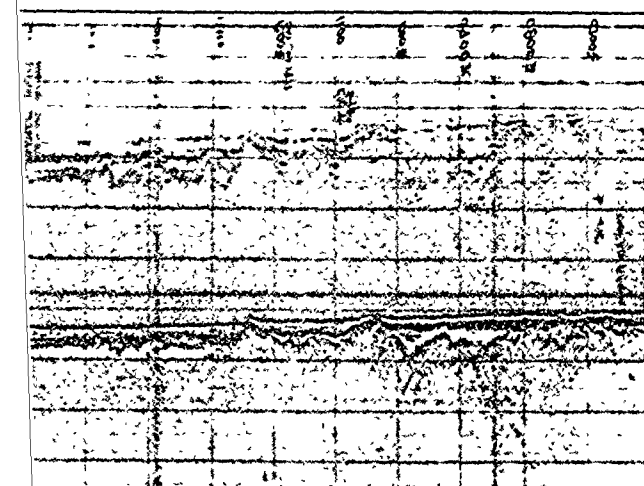


L'

JD 201 1977
0600Z

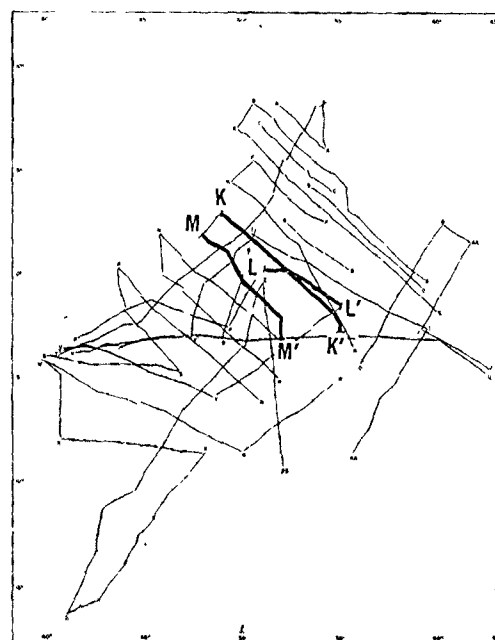
o/c 01°31.3' S
300° 055°10.0' E

1200Z



M'

JD 295 1979
1220Z
03°07.8' S
052°07.3' E



INDEX CHART (PLATES 4A, 4B)

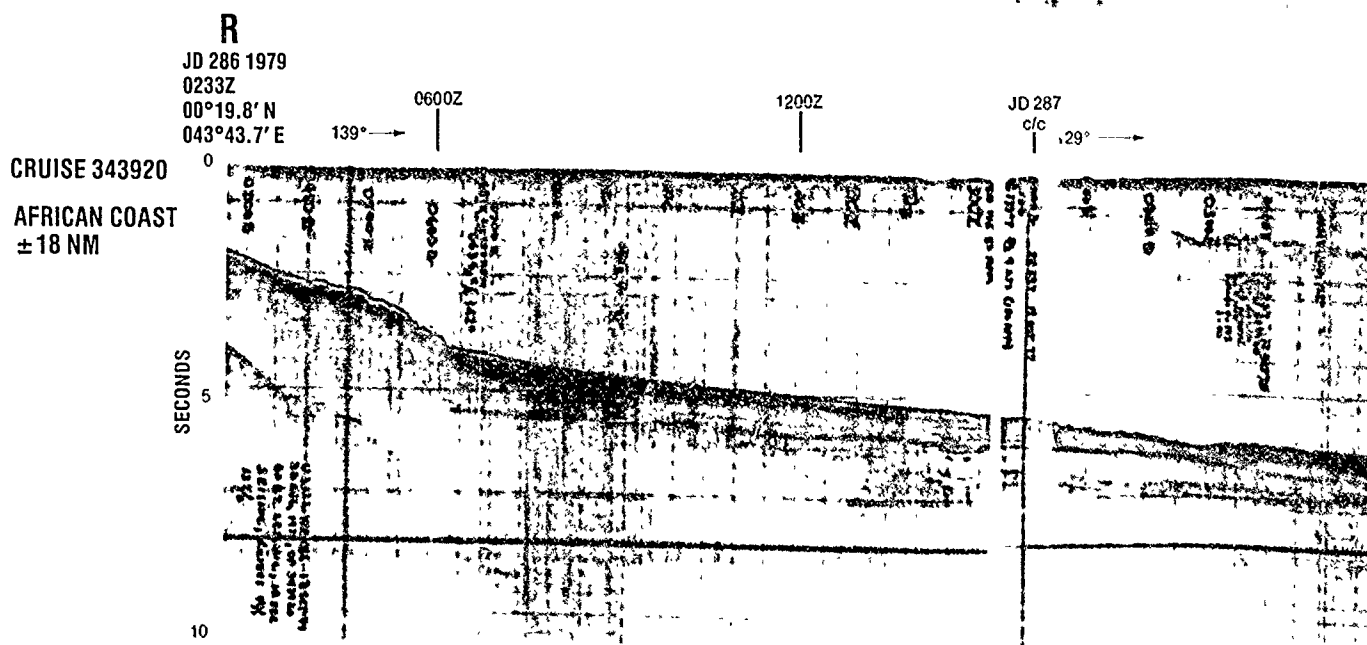
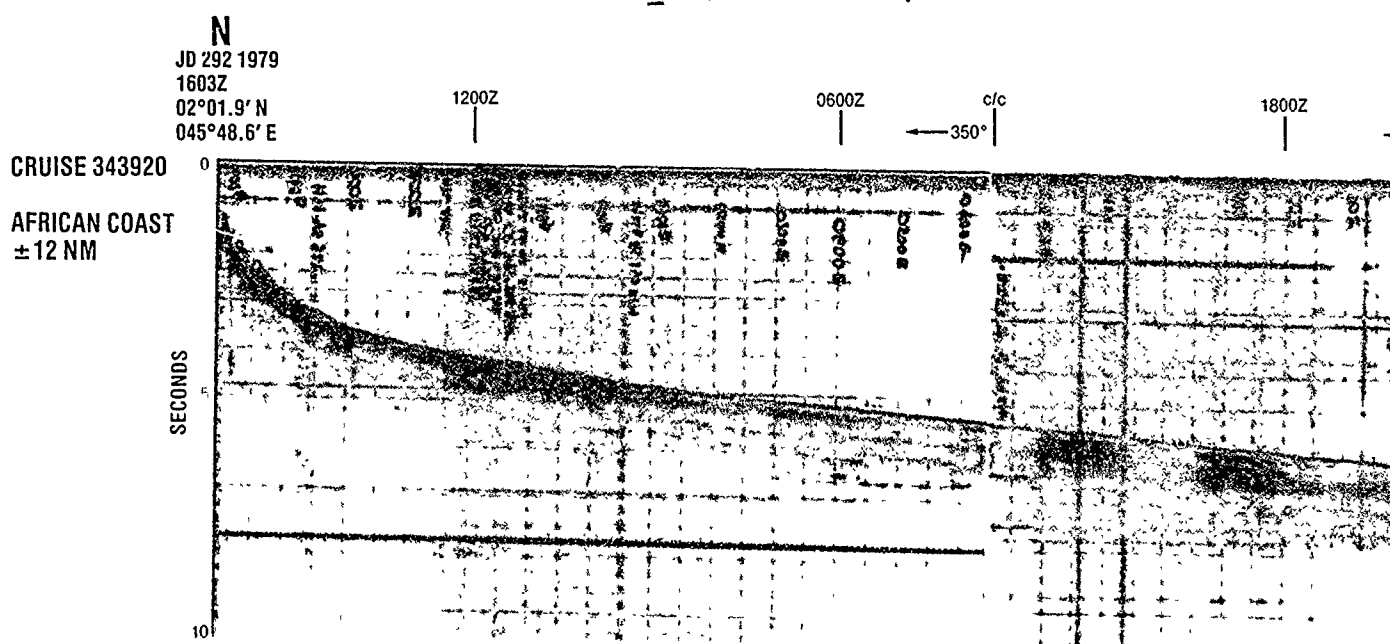
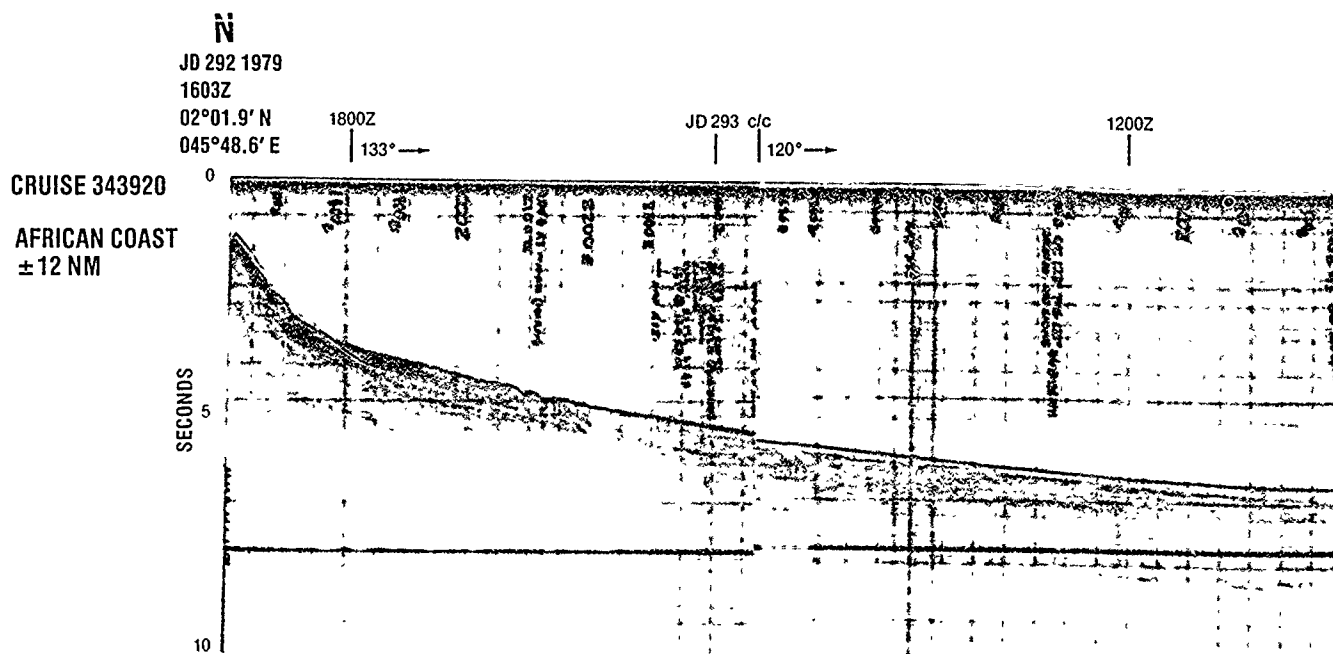
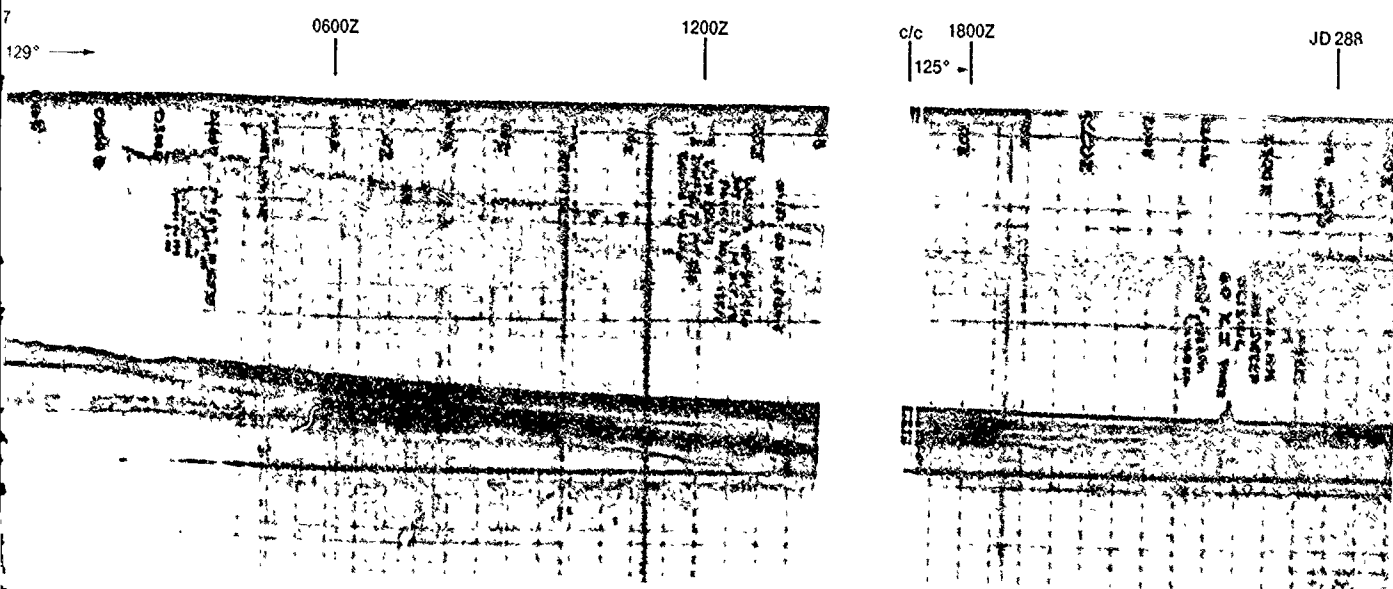
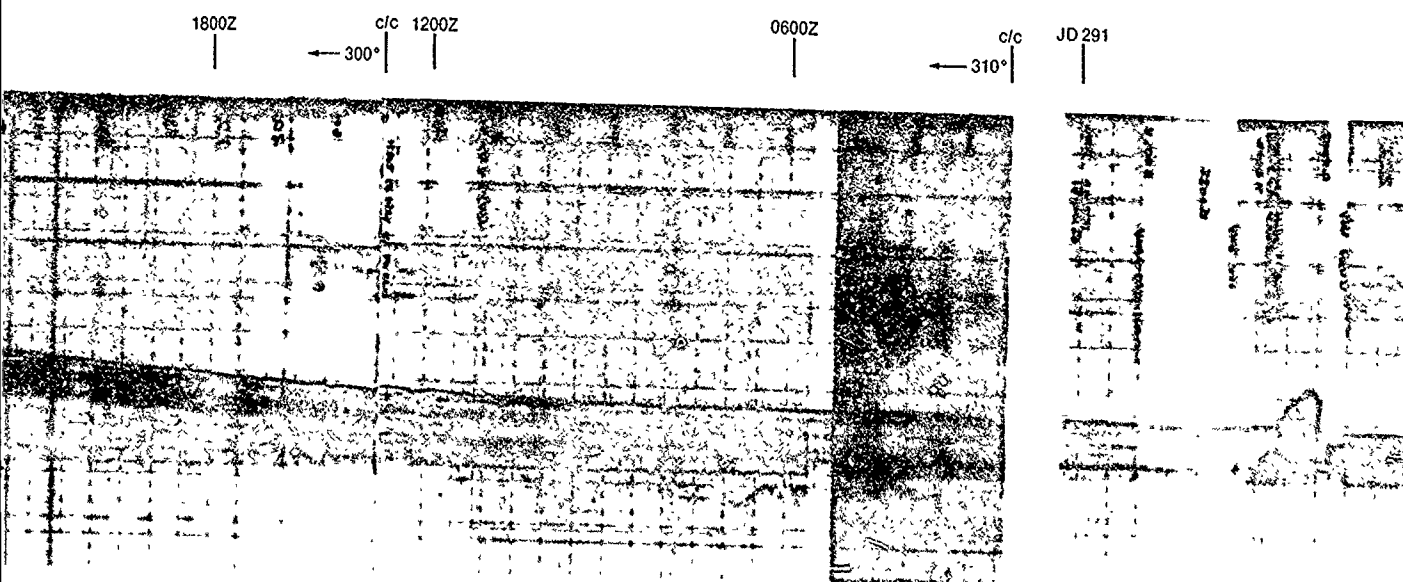
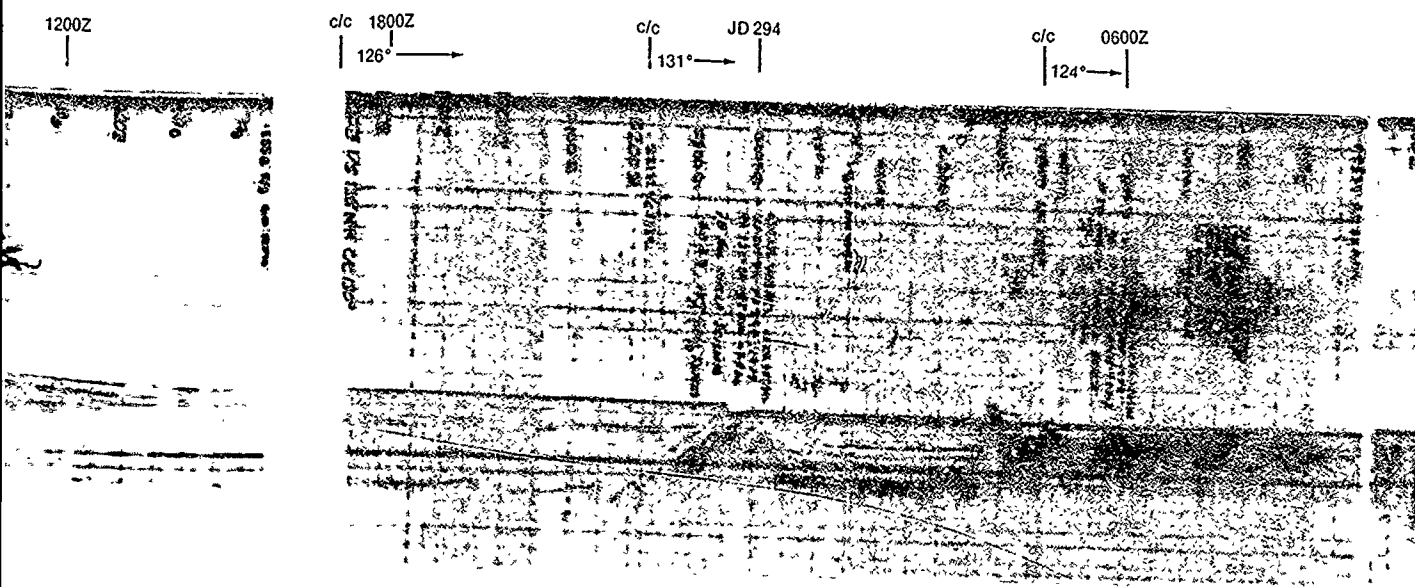
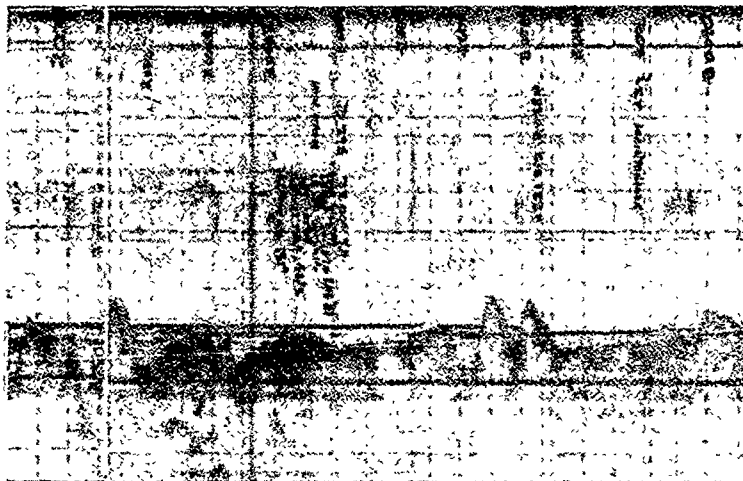


PLATE 5A

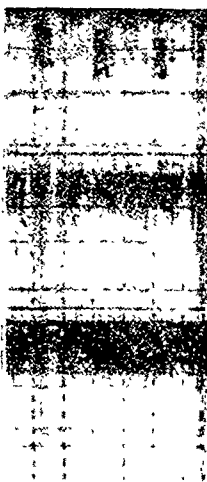


M'
JD 295 1979
0644Z
03°12.9' S
052°05.6' E

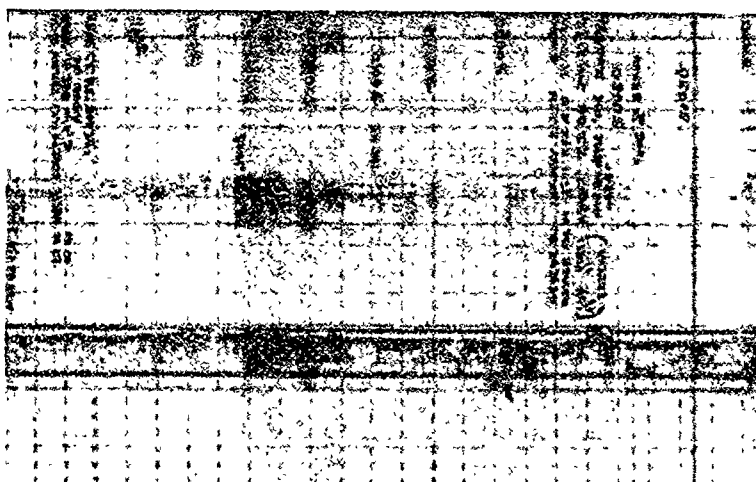
c/c
130°
JD 295



1800Z
c/c
311°

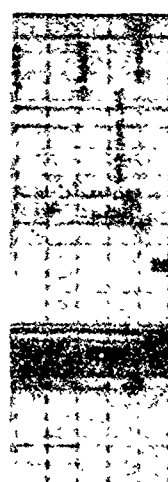


1200Z

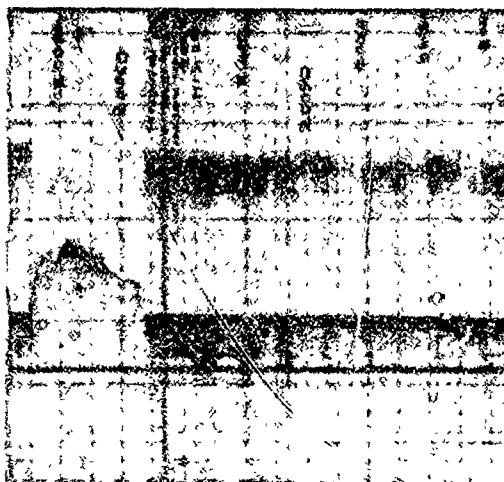


c/c
305°
0600Z

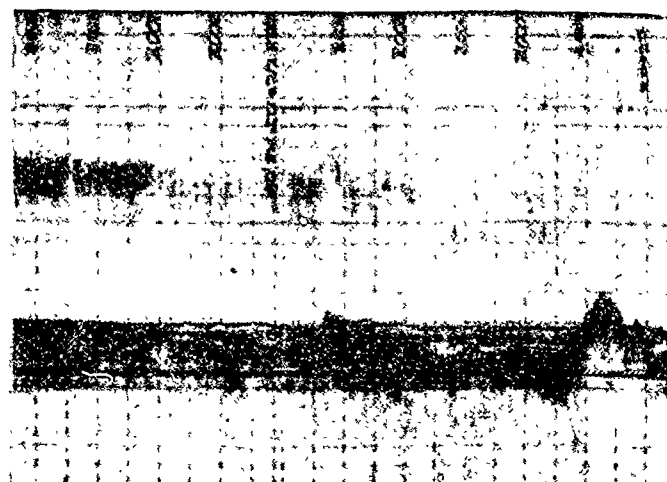
c/c
300°



0600Z

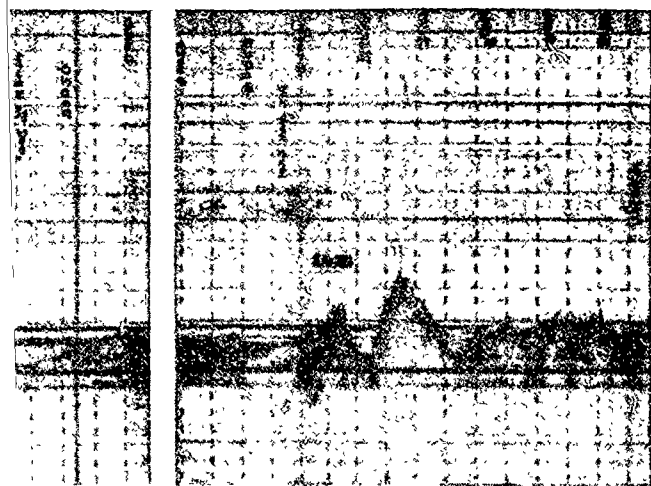


1200Z



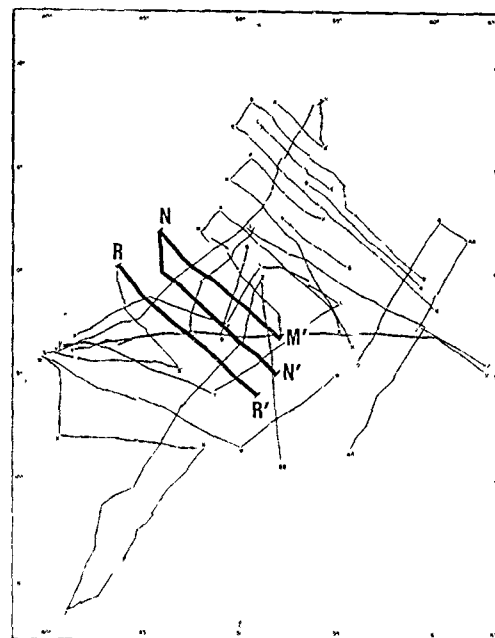
1800Z

1c



1800Z
← 312°

N'
JD 289 1979
1505Z
04°56.5' S
051°56.0' E



INDEX CHART (PLATES 5A, 5B)

R'

JD 289 1979
0230Z
05°58.3' S
050°57.8' E

1800Z

JD 289



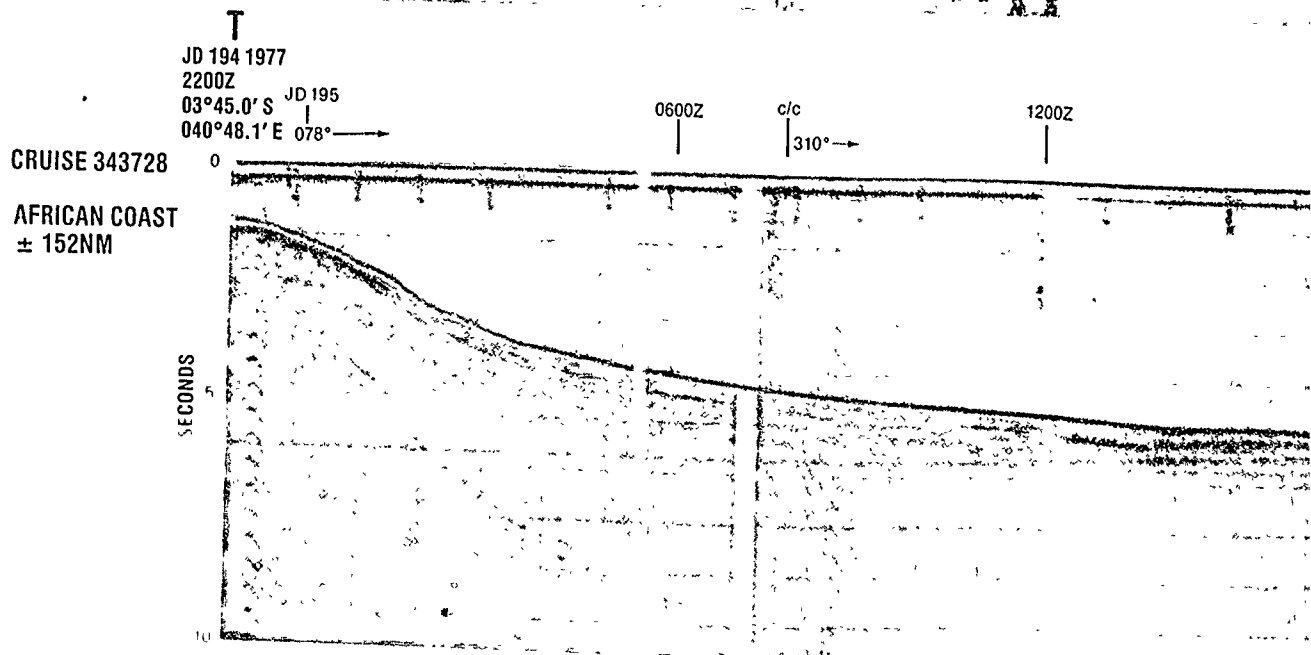
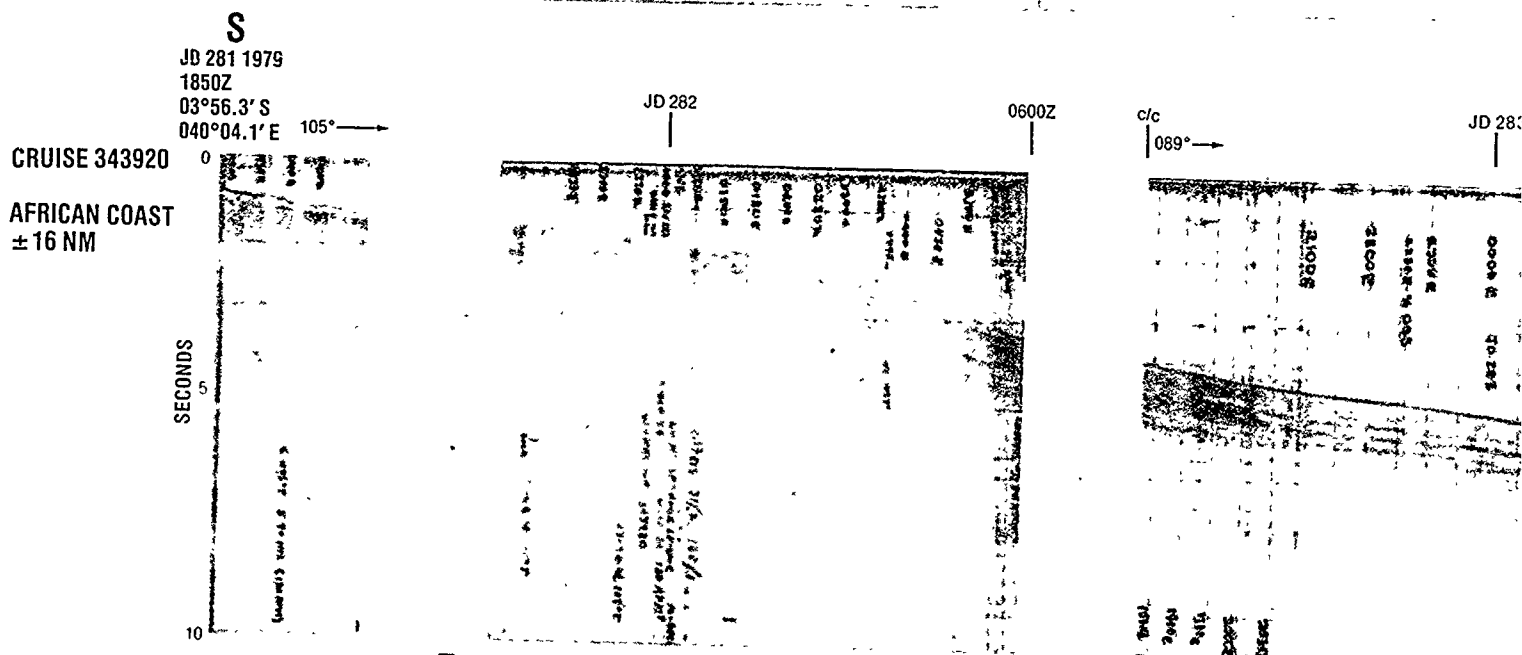
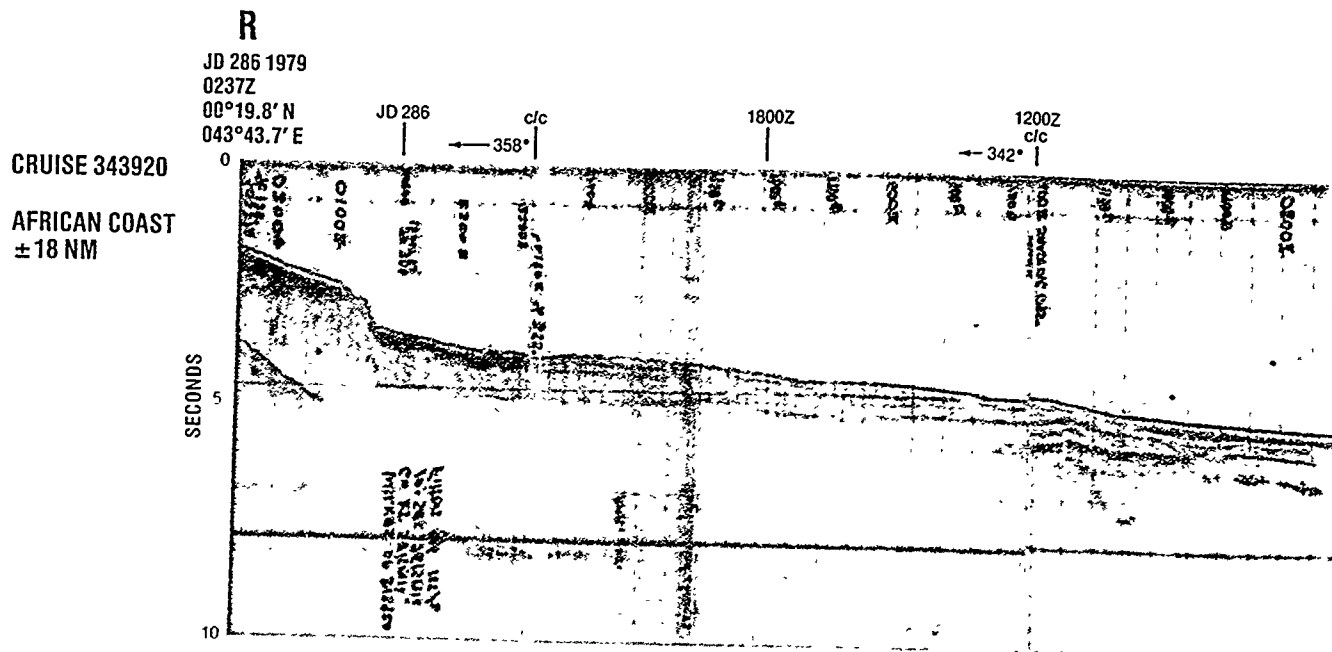
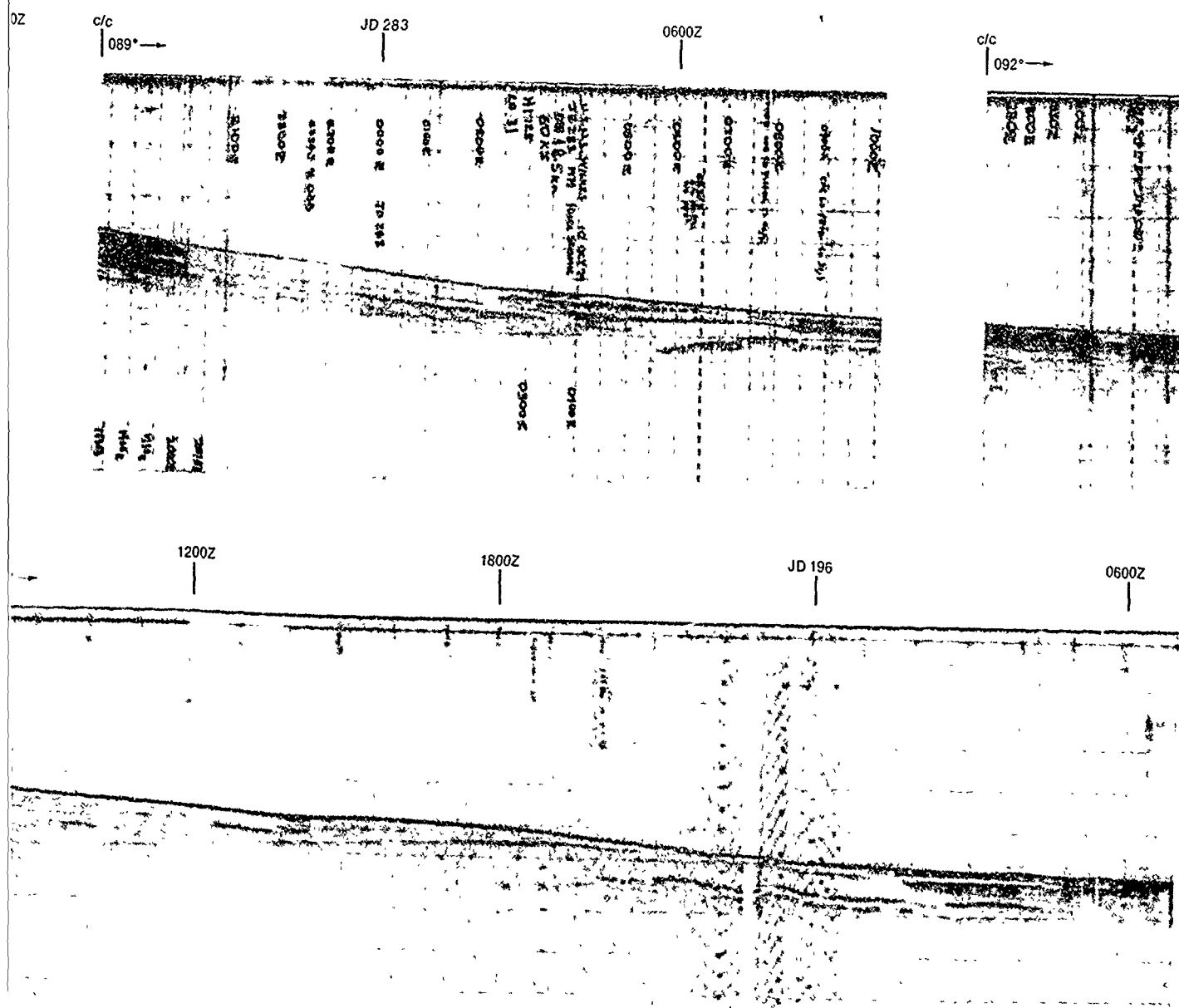
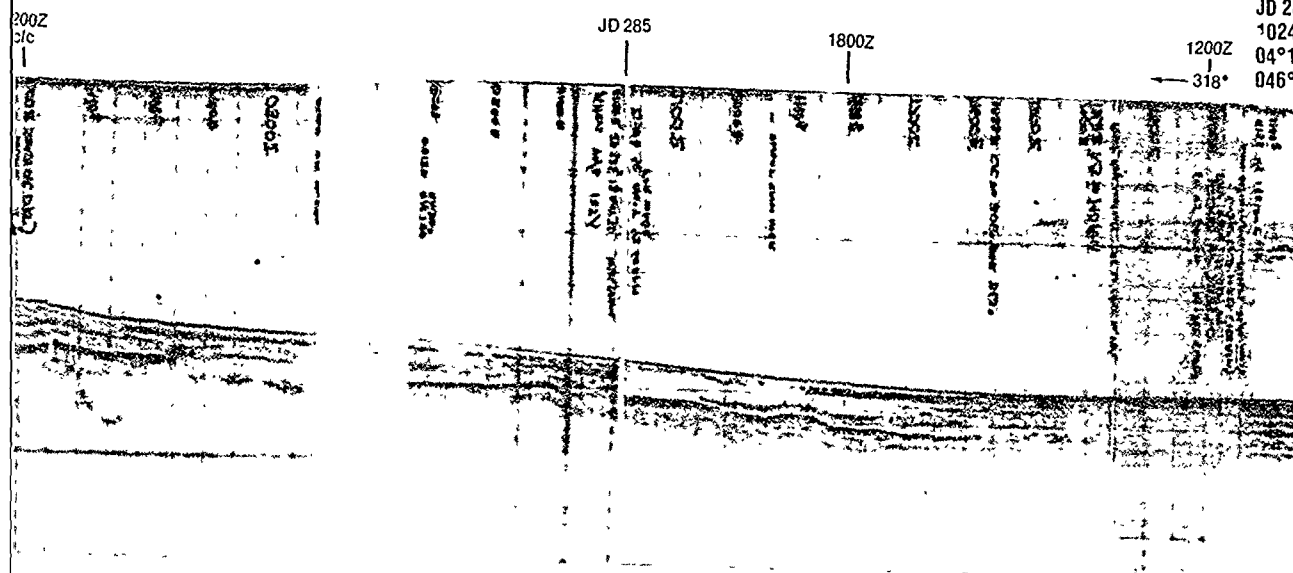


PLATE 6A

S'

JD 284 1979
1024Z
04°14.4' S
046°31.9' E



2

S'

JD 284 1979
0619Z
04°38.5' S
046°55.0' E

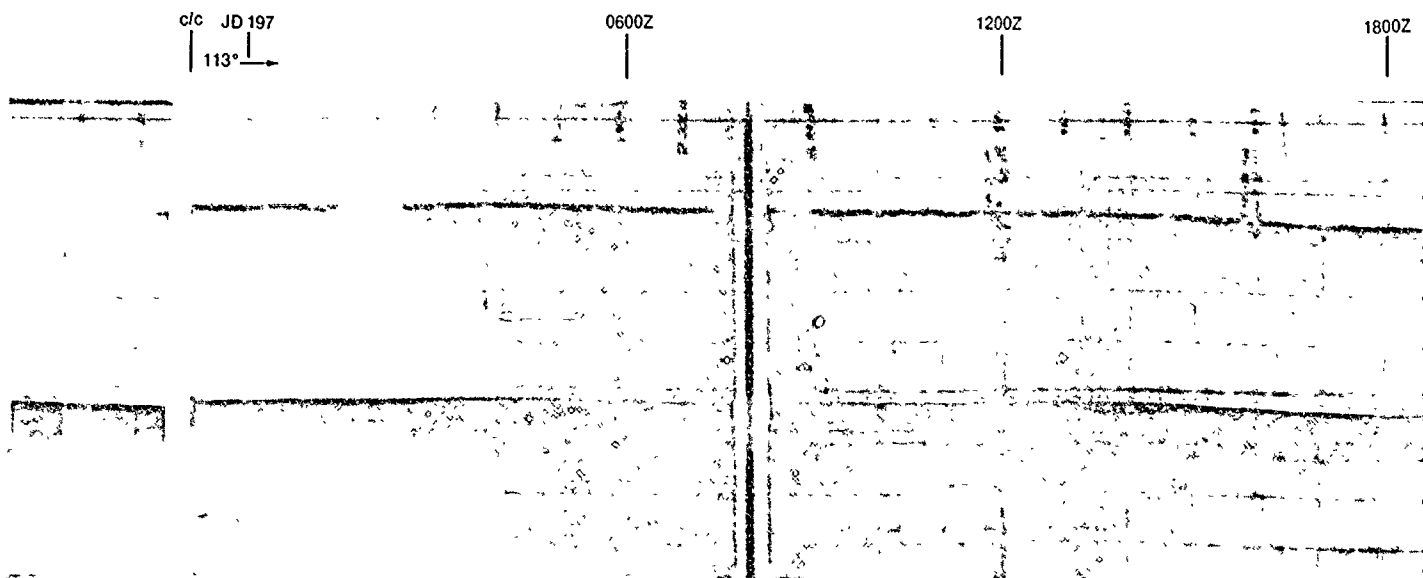
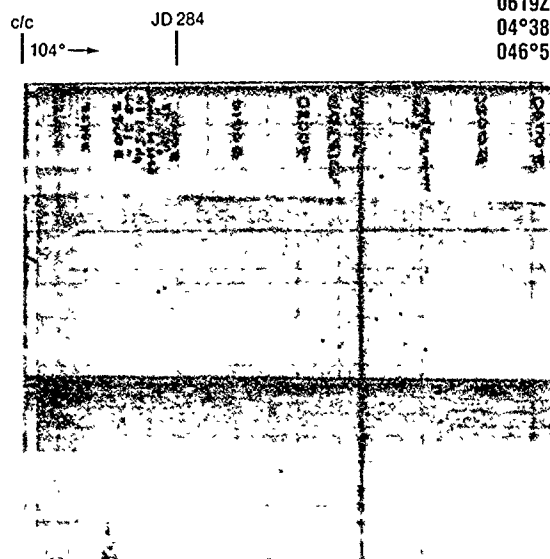
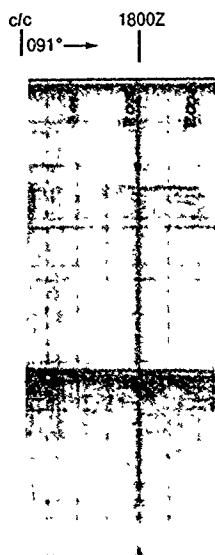
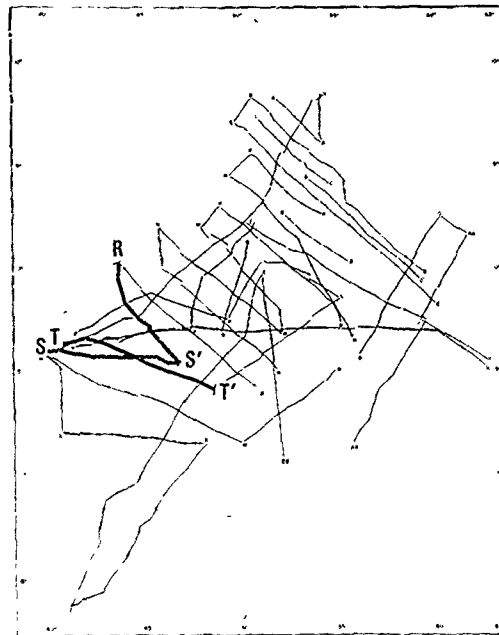


PLATE 6B



INDEX CHART (PLATES 6A, 6B)

S'

84 1979
9Z
38.5' S
55.0' E

T'

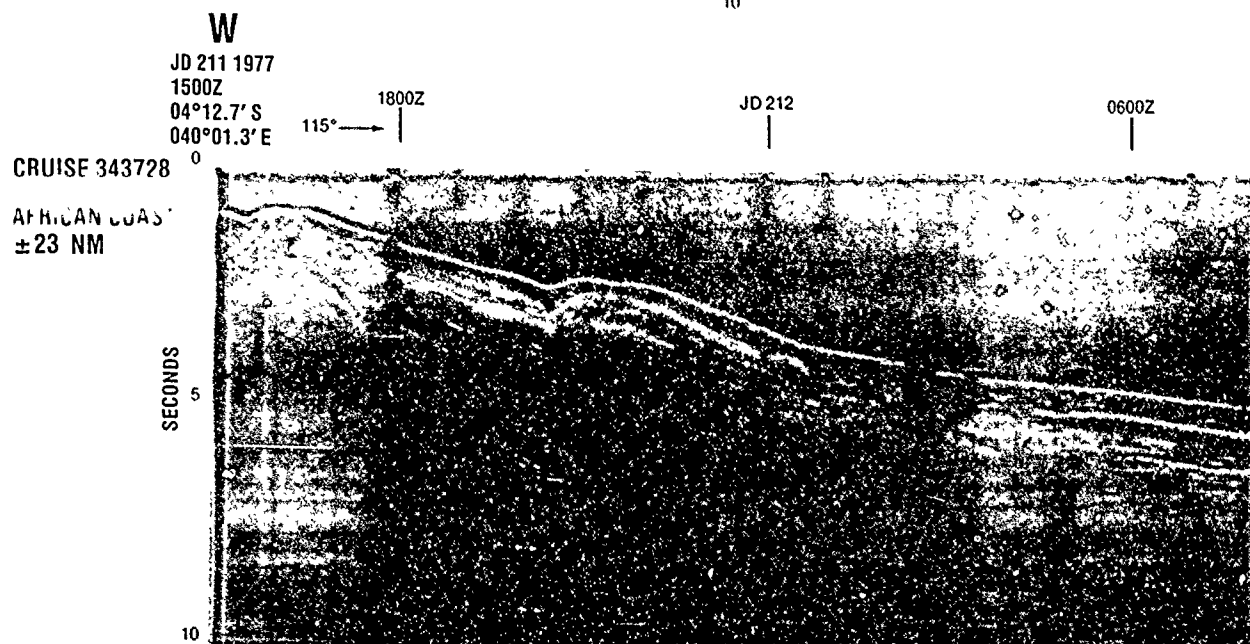
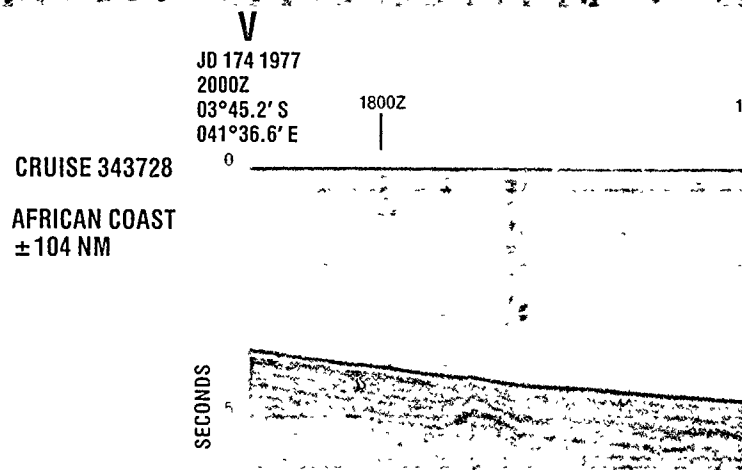
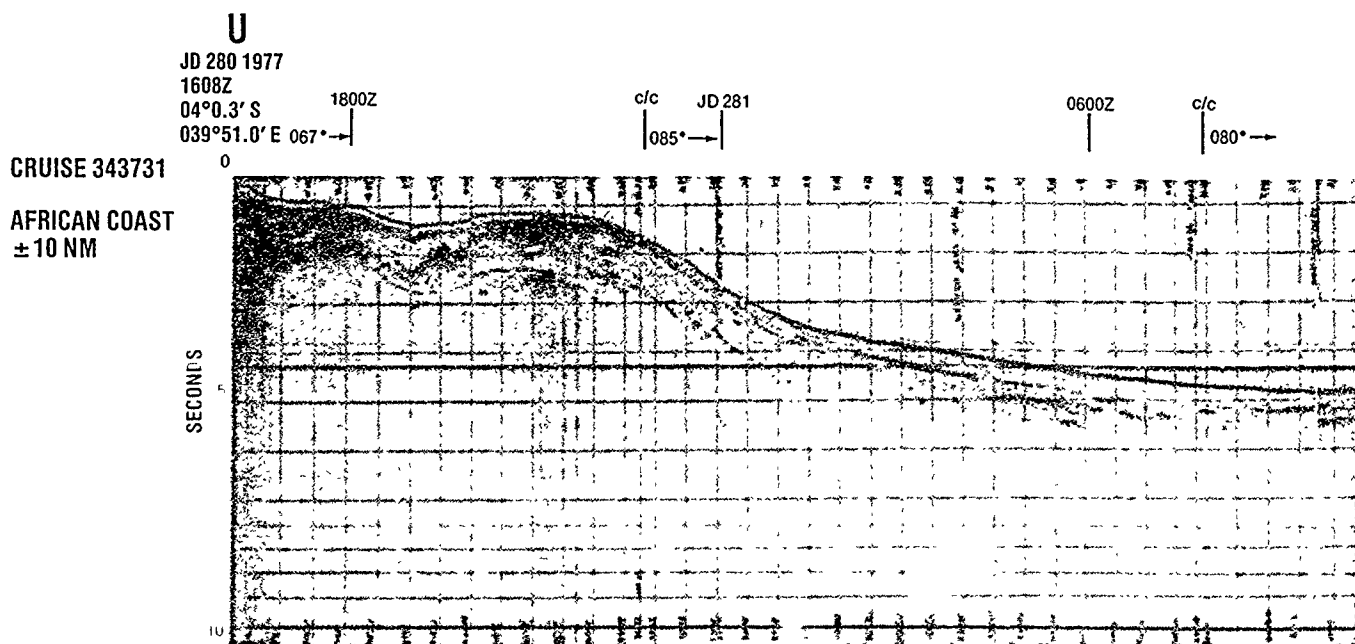
JD 198 1977
0254Z
05°52.3' S
048°35.0' E

1200Z

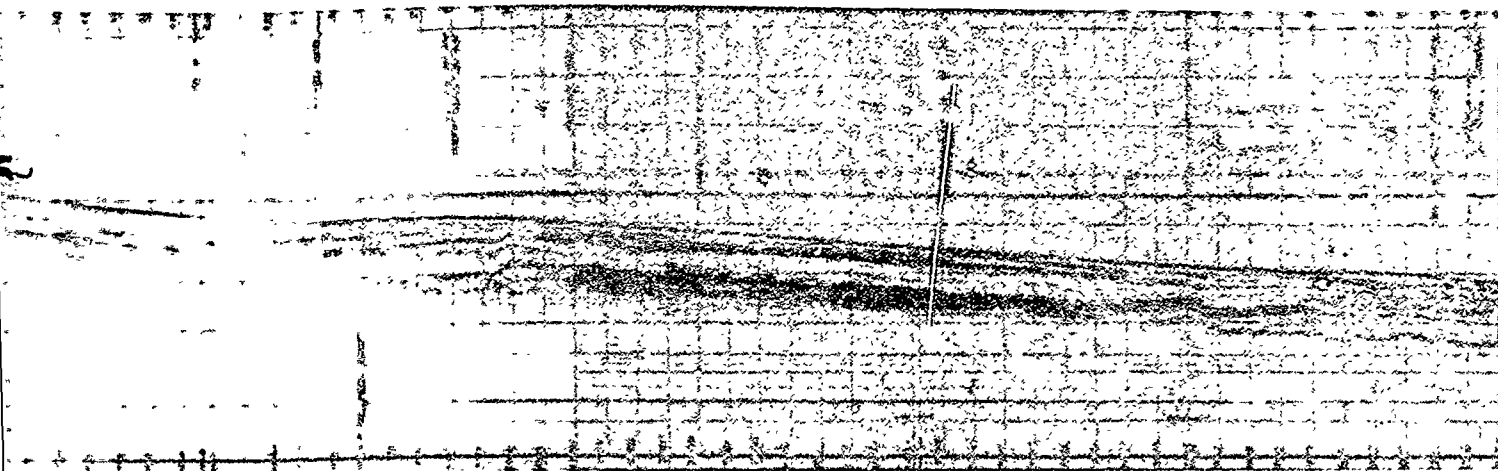
1800Z

JD 198

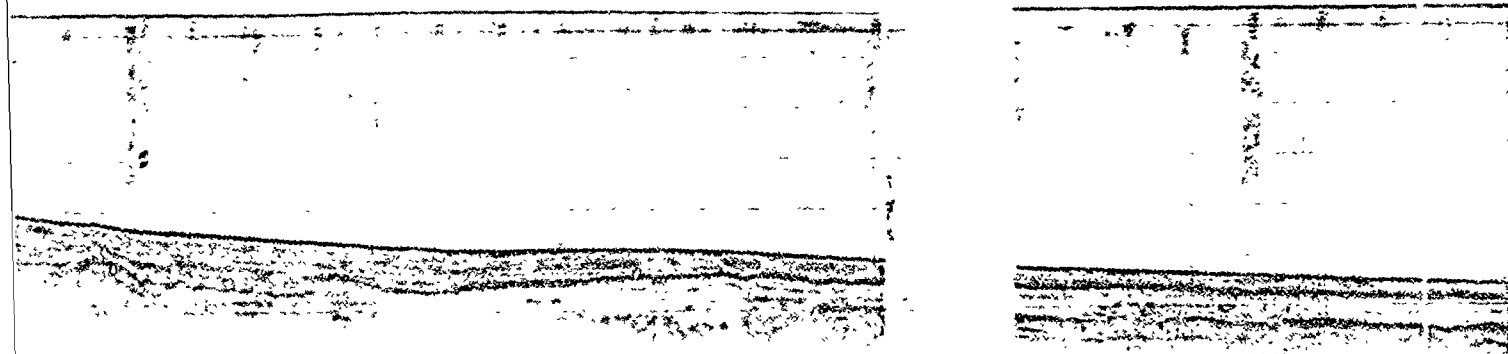




0600Z c/c 1200Z 1800Z 'D 282
 | | | | |
 080° →



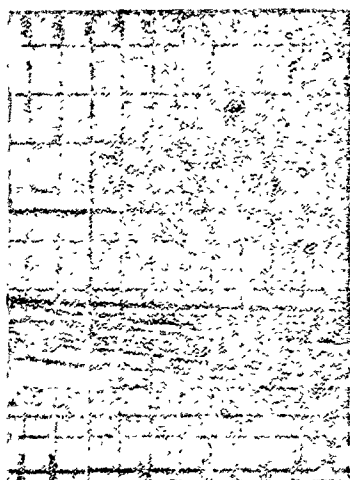
0Z 1200Z 0600Z 1800Z JD 173
 | | | | |
 1200Z



0600Z c/c 1200Z c/c 1800Z
 | | | | |
 102° → 110° →



c/c 0600Z
090° →



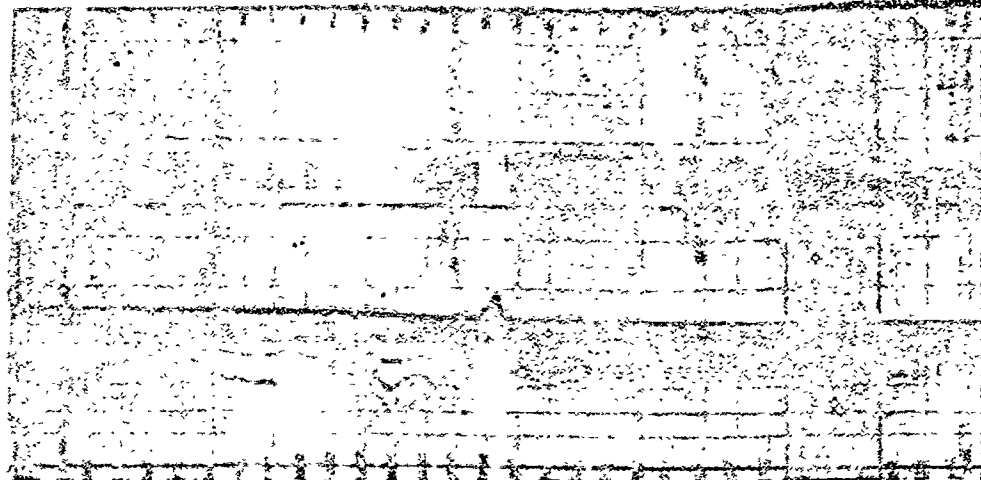
c/c 087° →

JD 283

c/c 085° →

0600Z

1200Z

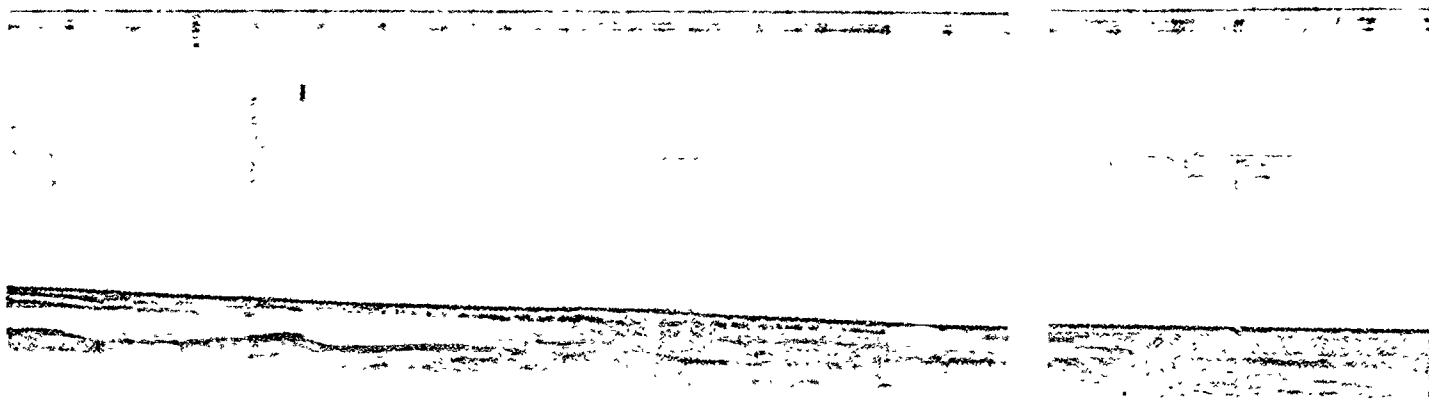


← 249° c/c 0600Z

JD 173

← 259° c/c 1800Z

← 265°



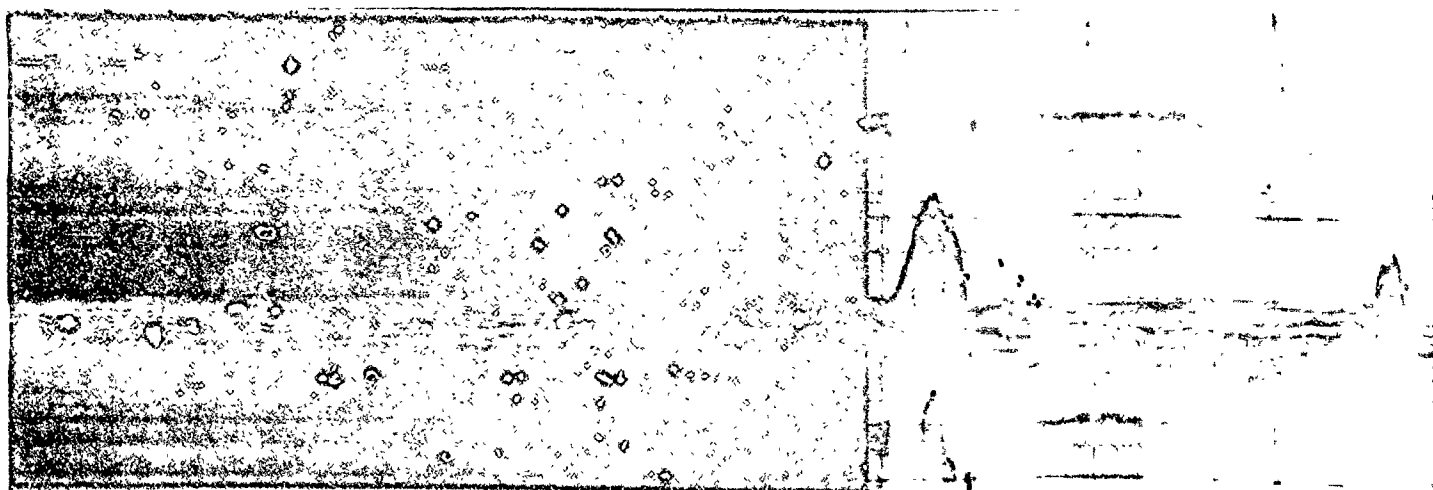
c/c 1200Z
108° →

c/c 114° →

c/c 122° → 1800Z

JD 214
c/c 115° →

0600Z



0600Z

1200Z

c/c

087° →

1800Z

JD 284

V'

JD 172 1977

1154Z

02°56.6' S

047°25.5' E

c/c

1800Z

← 259°

← 265°

0600Z

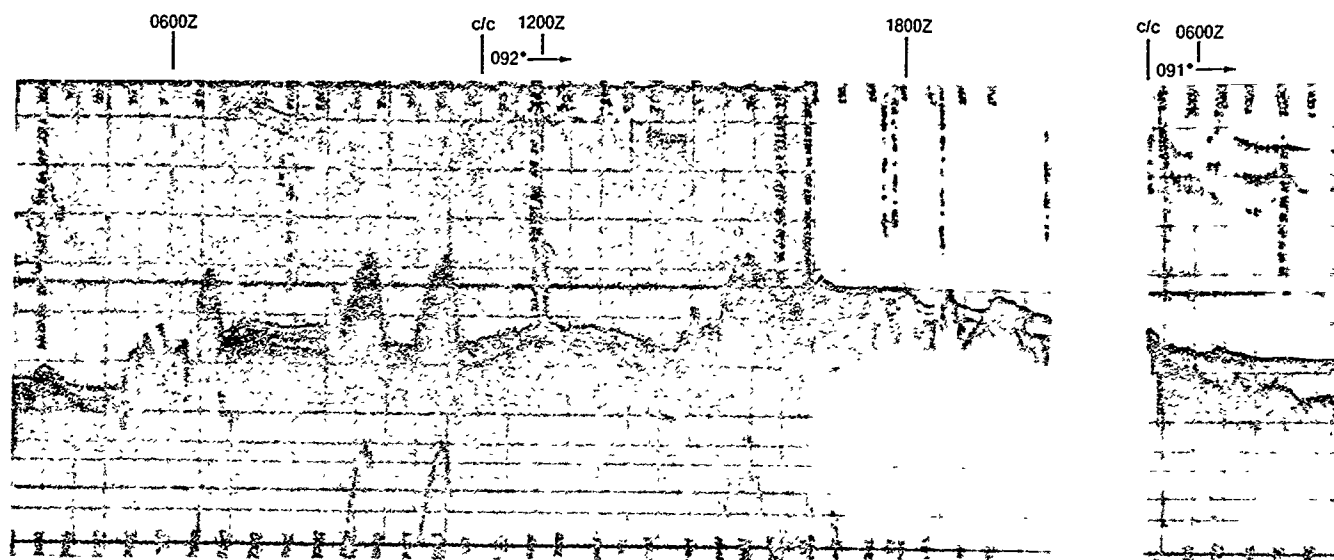
1200Z

c/c

055° →

1800Z

JD 215



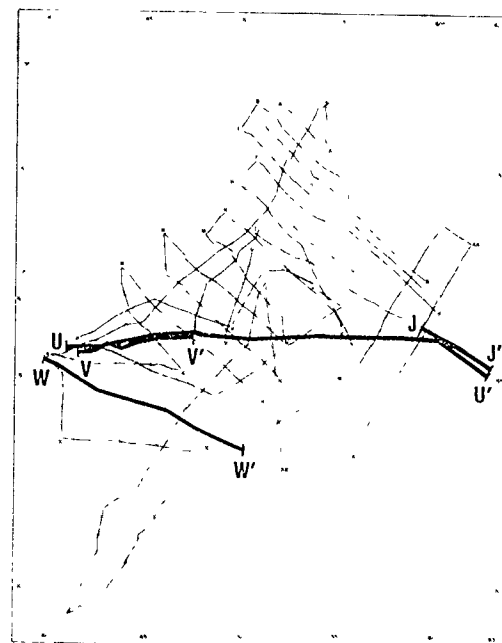
W'

JD 214 1977

0206Z

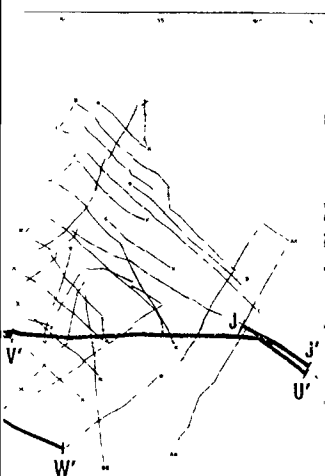
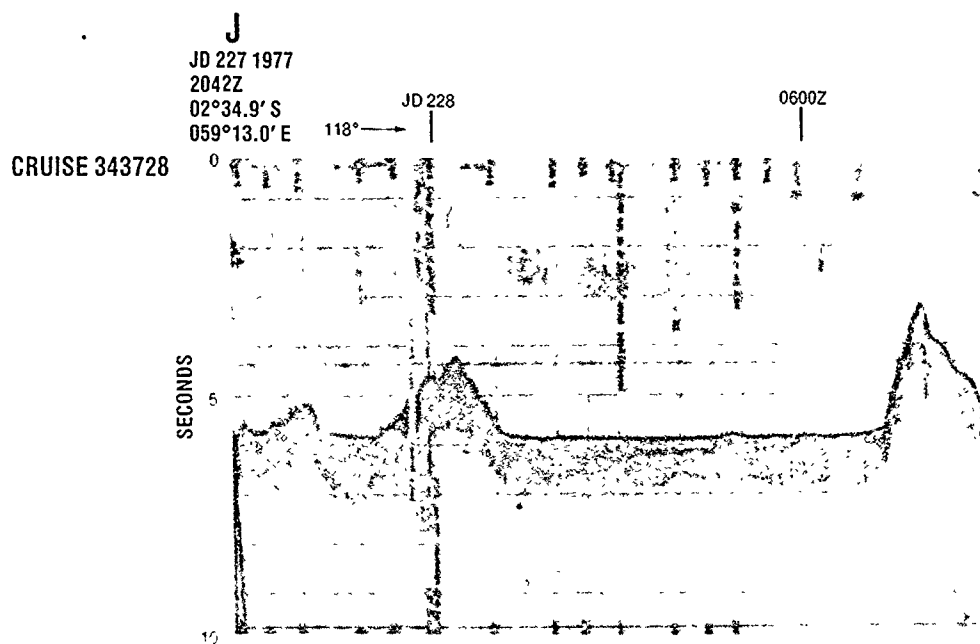
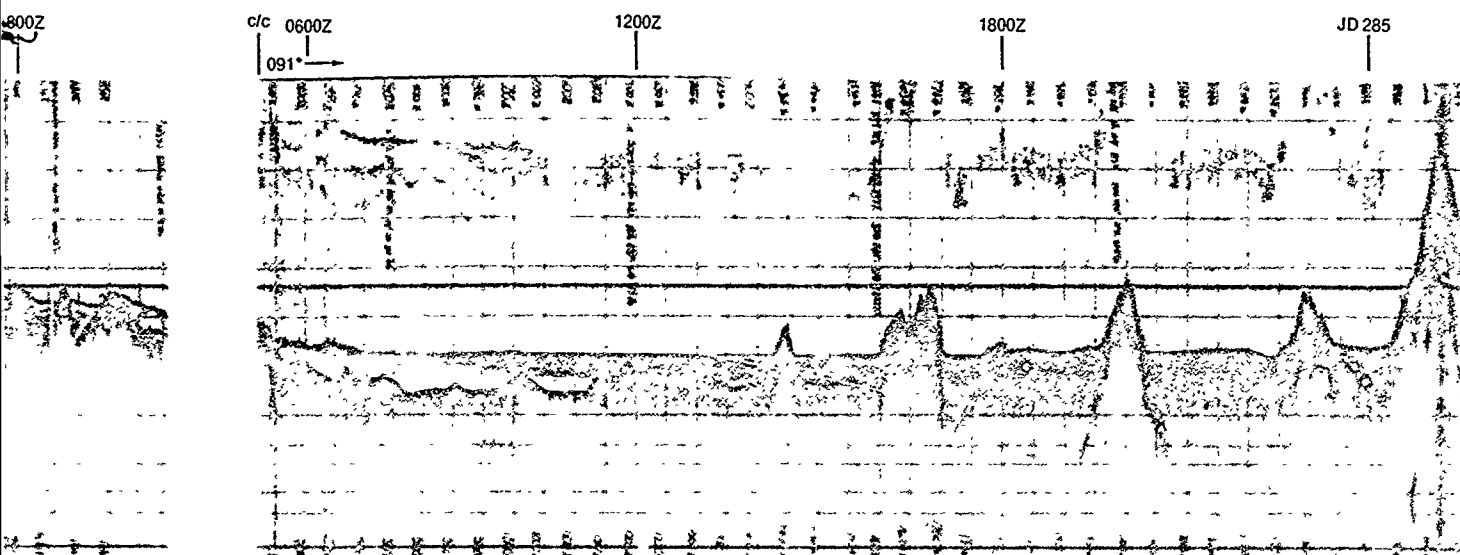
07°19.6' S

051°30.4' E

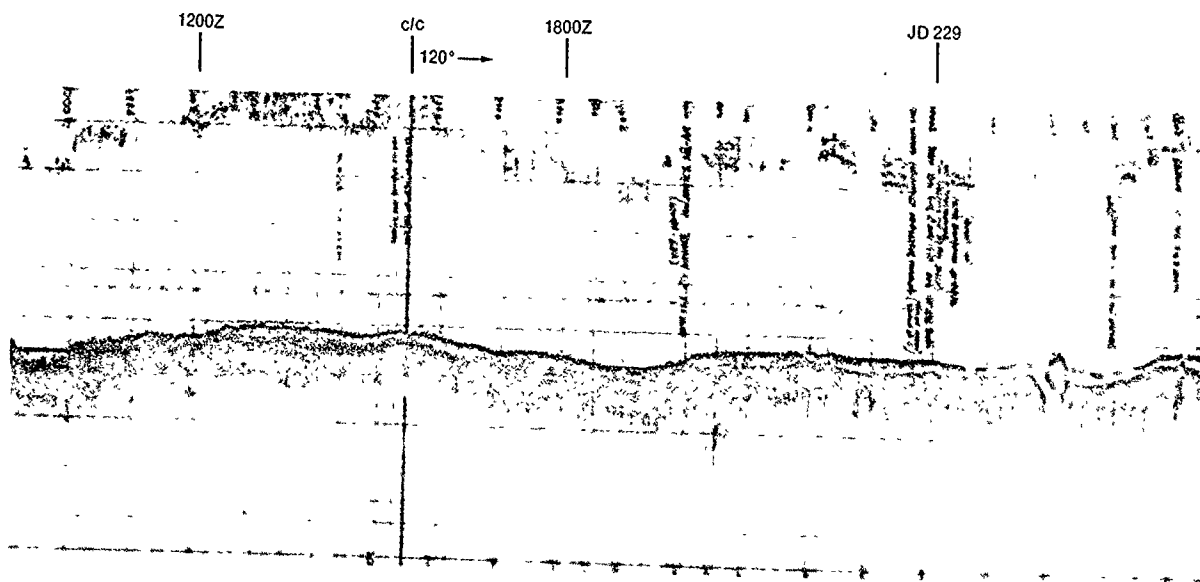
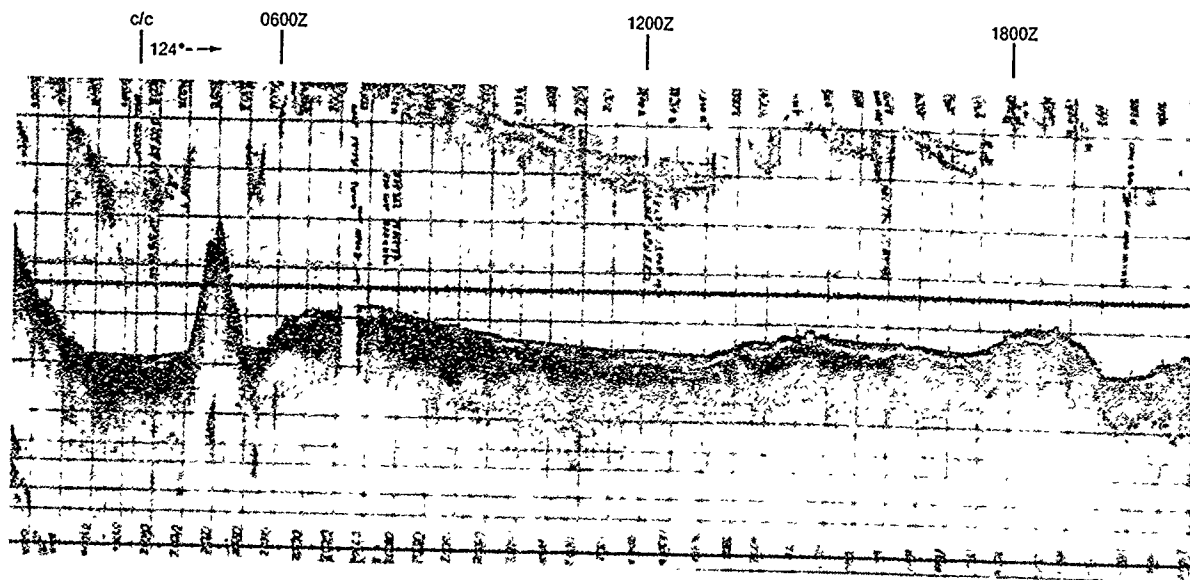


INDEX CHART (PLATES 7A, 7B, 7C, 7D)

PLATE 7C



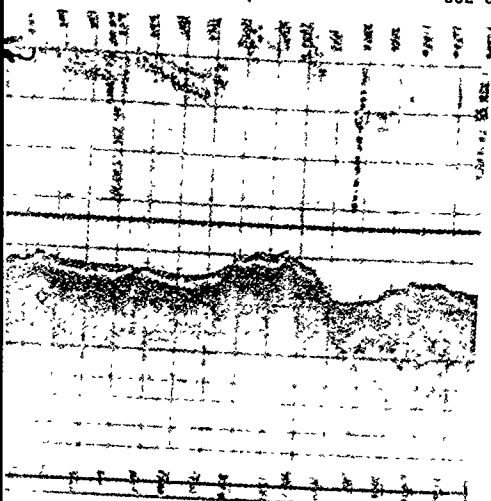
RT (PLATES 7A, 7B, 7C, 7D)



U'

JD 286 1977
2159Z
04°53.8' S
062°50.8' E

1800Z

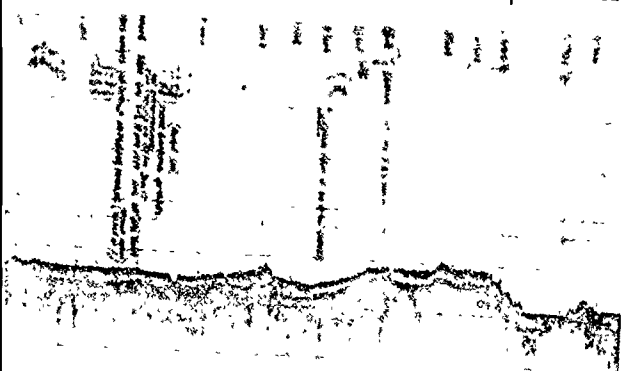


J'

JD 229 1979
0800Z
04°30.3' S
062°45.5' E

JD 229

0600Z



C
A
=

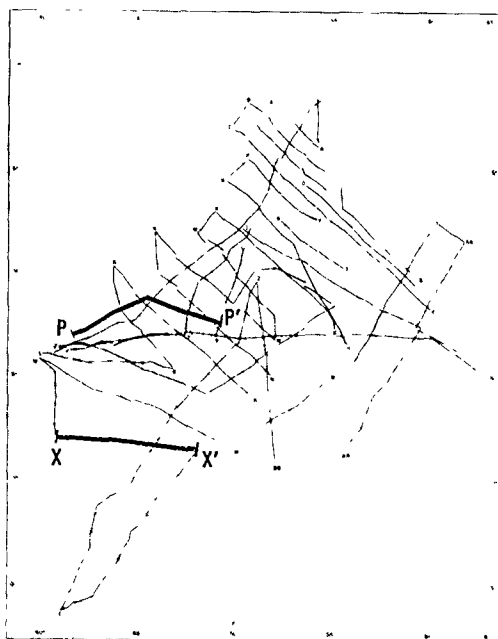
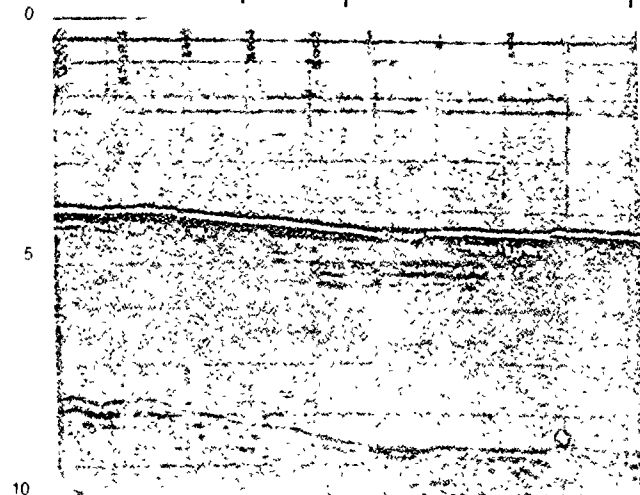
P

JD 207 1977
0902Z
03°03.7' S
041°45.1' E

0600Z c/c
← 252°

JD 2

CRUISE 343728
AFRICAN COAST
± 110 NM



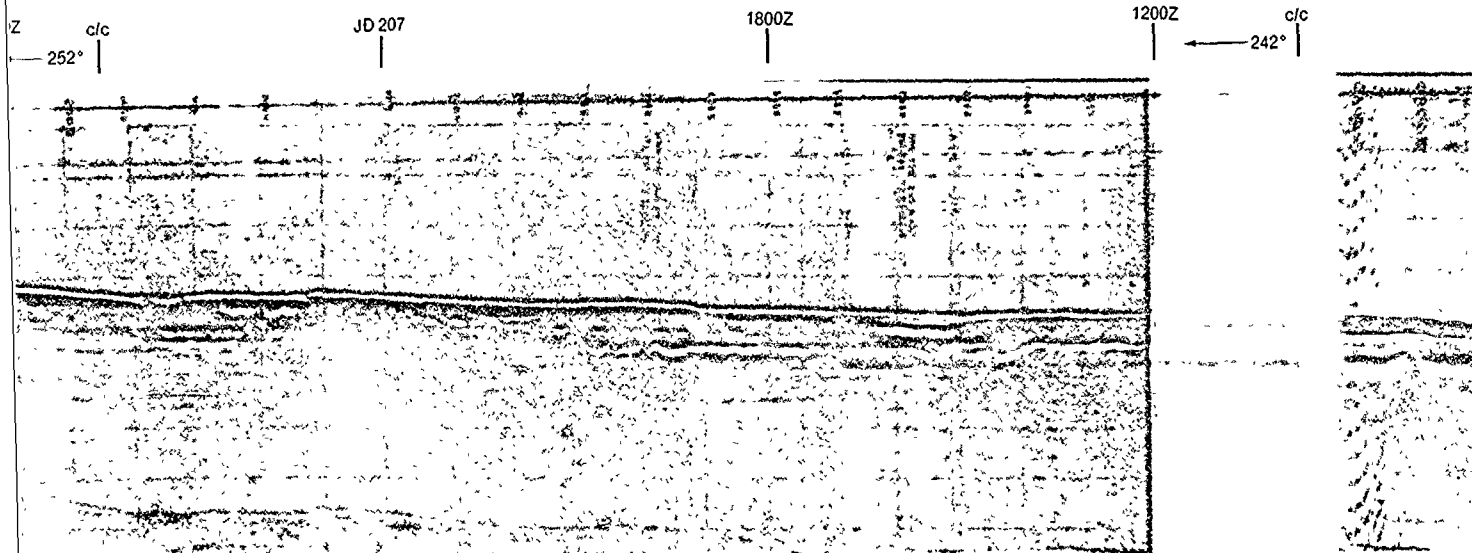
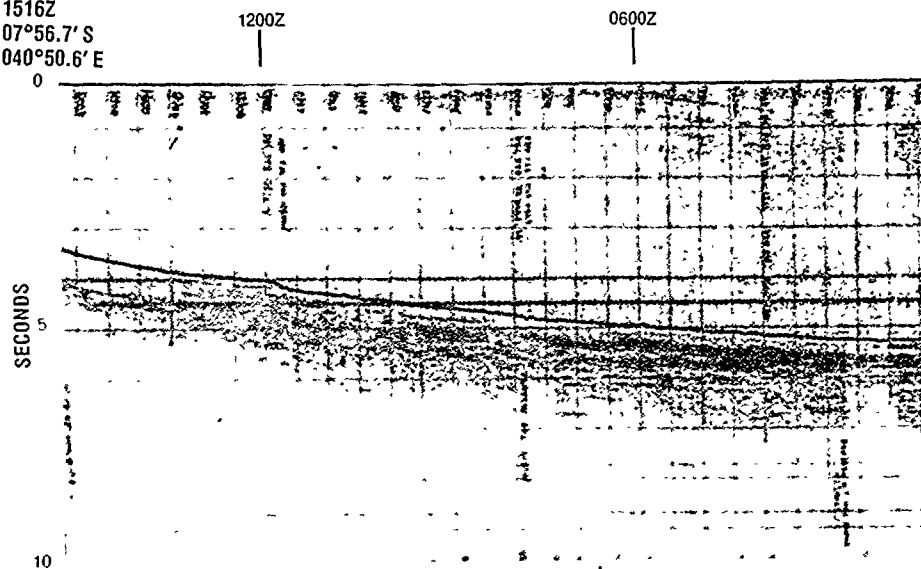
INDEX CHART (PLATES 8A, 8B)

X

JD 268 1977
1516Z
07°56.7' S
040°50.6' E

CRUISE 343731

AFRICAN COAST
± 220 NM



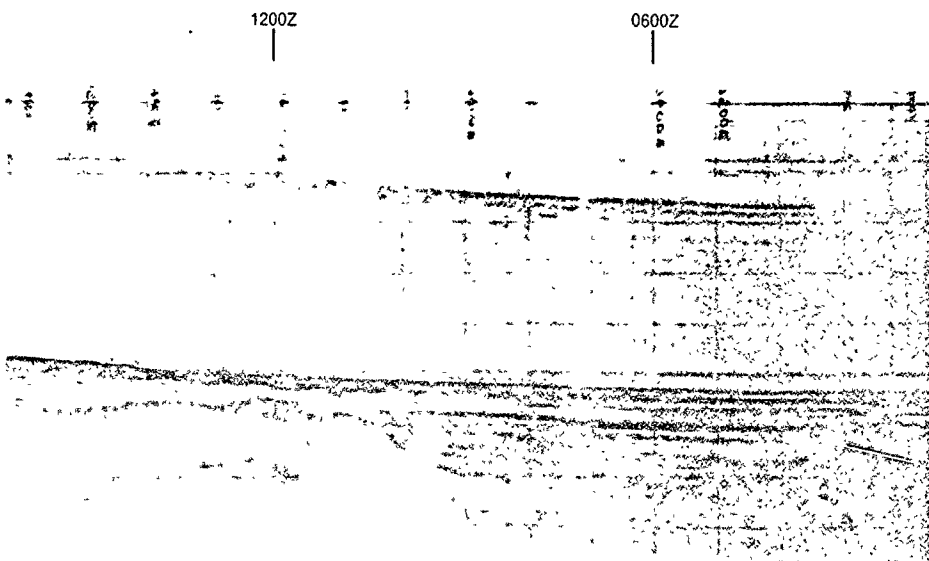
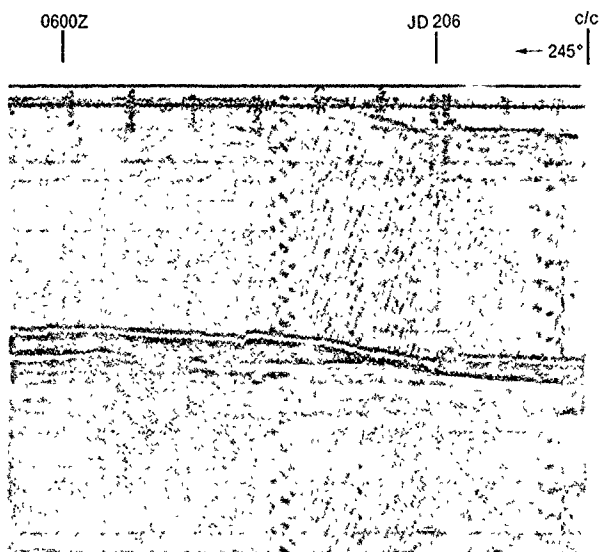
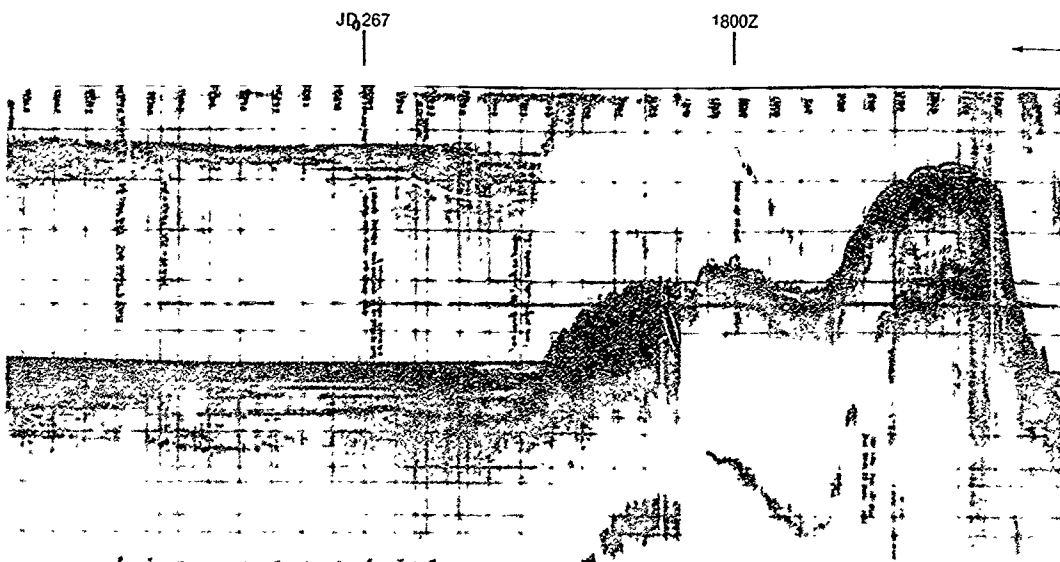
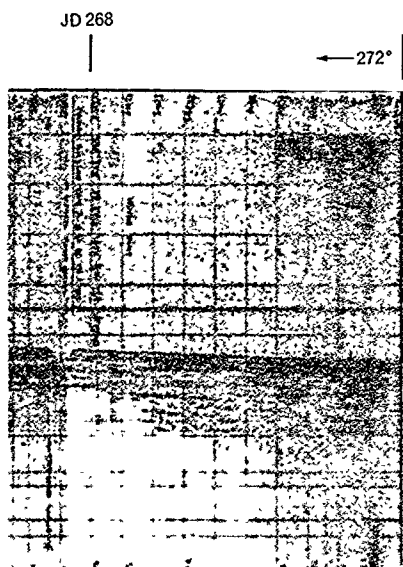


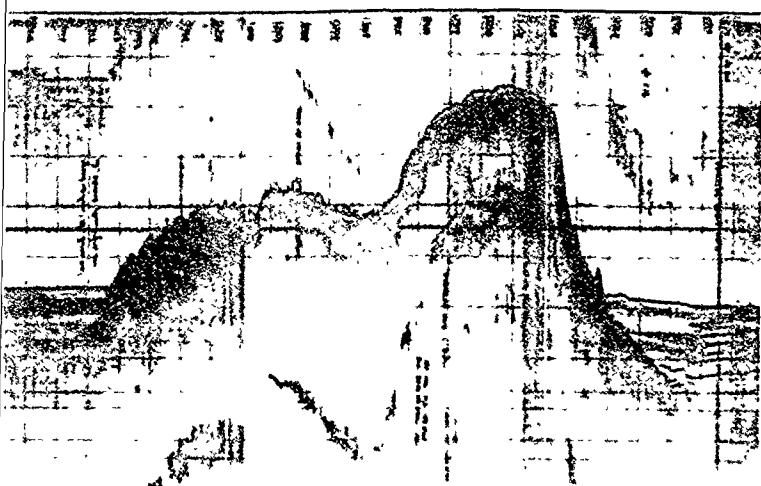
PLATE 8B

X'

JD 266 1977
1113Z
08°32.0' S
047°52.0' E

1800Z

← 272°



P'

JD 204 1977
1448Z
02°24.6' S
049°00.5' E

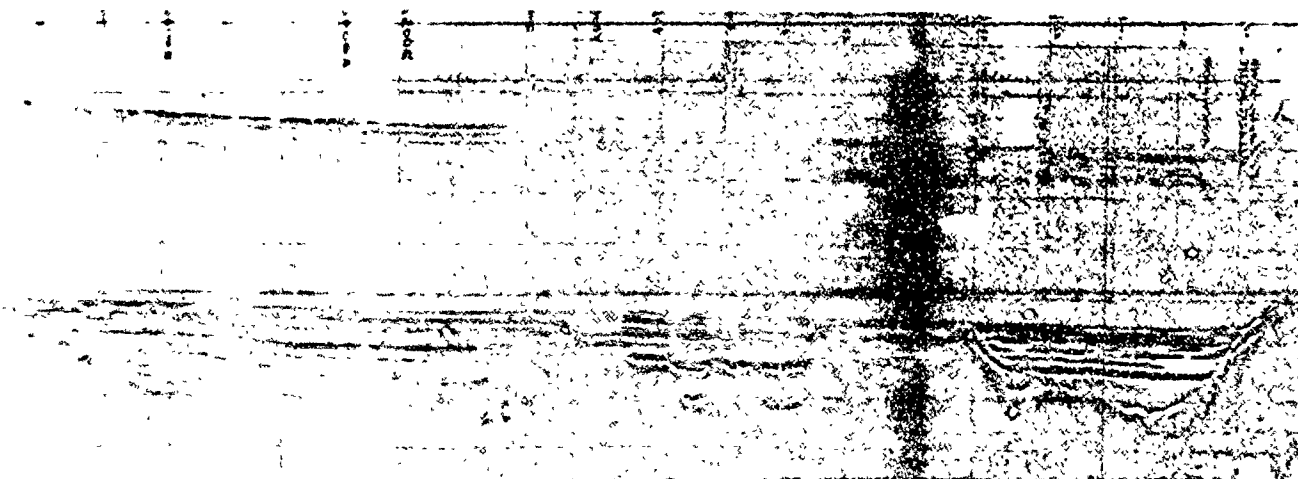
0600Z

JD 205

1800Z

← 288° c/c

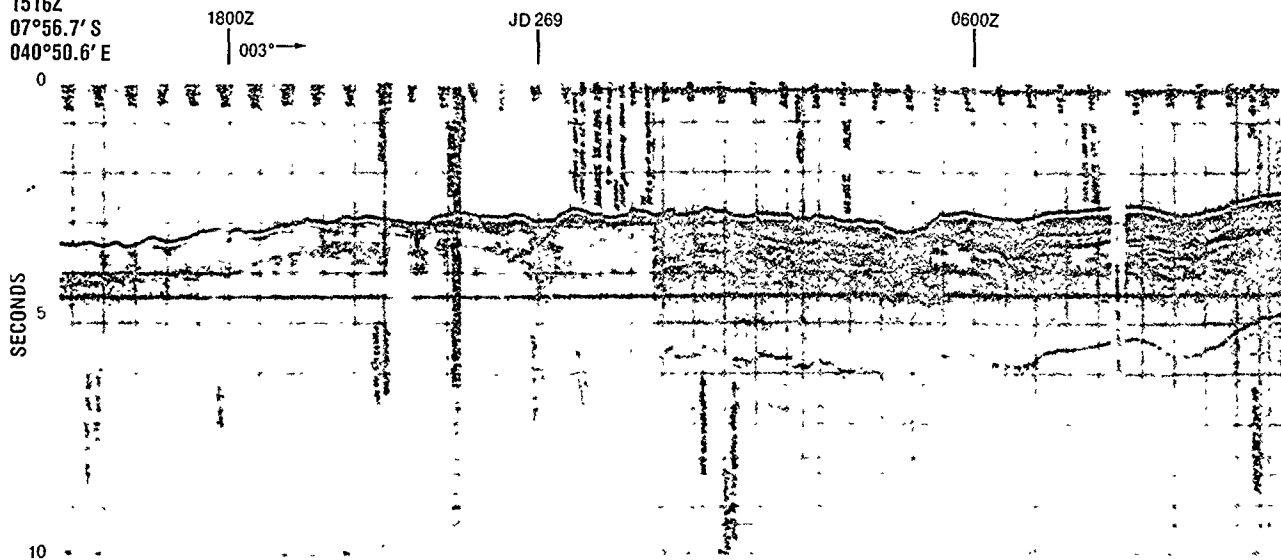
← 282°



X

JD 268 1977
1516Z
07°56.7' S
040°50.6' E

CRUISE 343731



Y

JD 275 1979
0557Z
03°56.0' S
040°39.8' E

CRUISE 343916

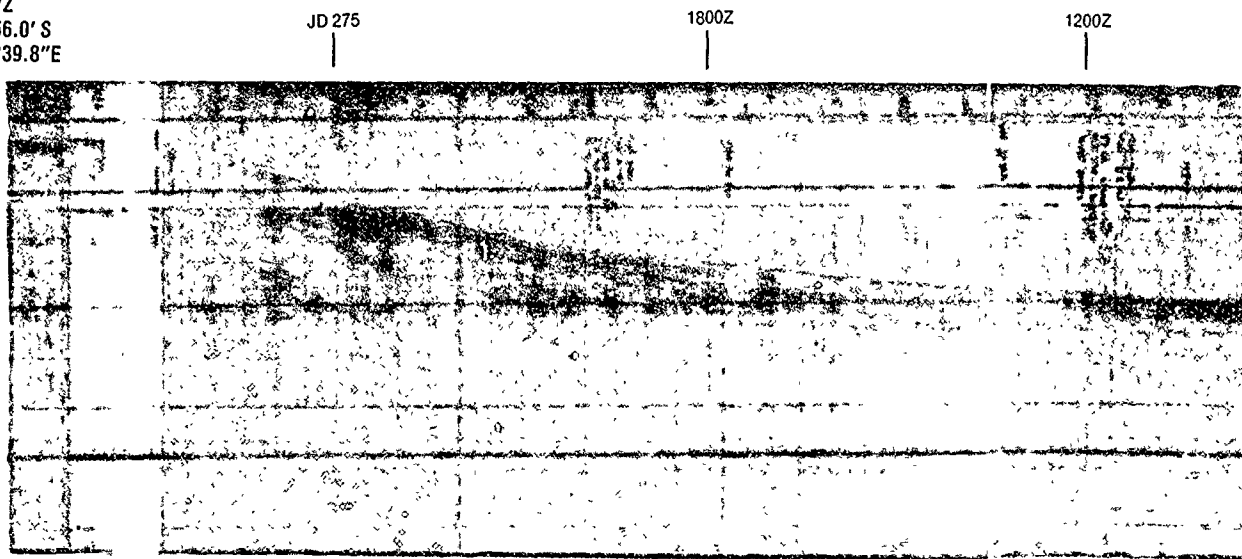


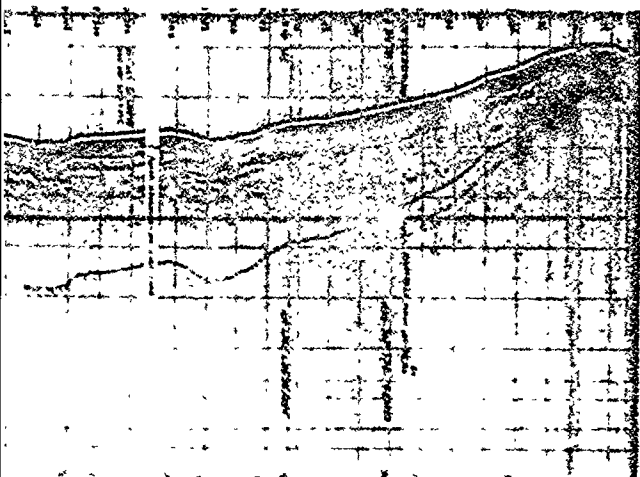
PLATE 9A

W

JD 269 1977
1600Z
04°12.6' S
040°03.5' E

000Z

1200Z

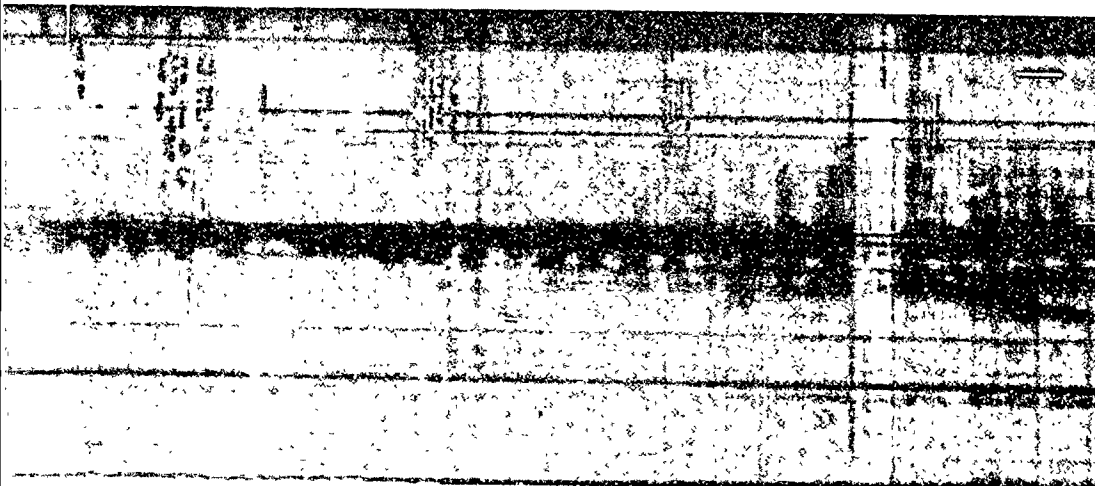


1200Z

0600Z

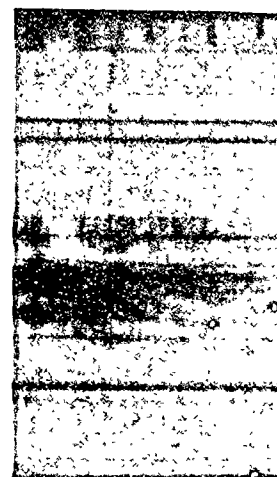
JD 274
c/c

← 245°



1200Z
c/c

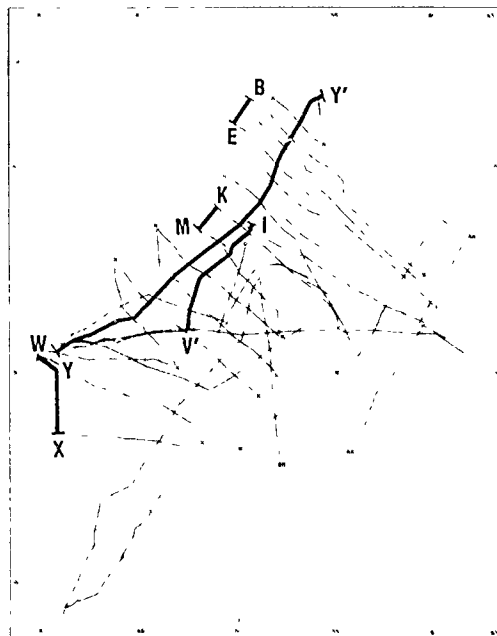
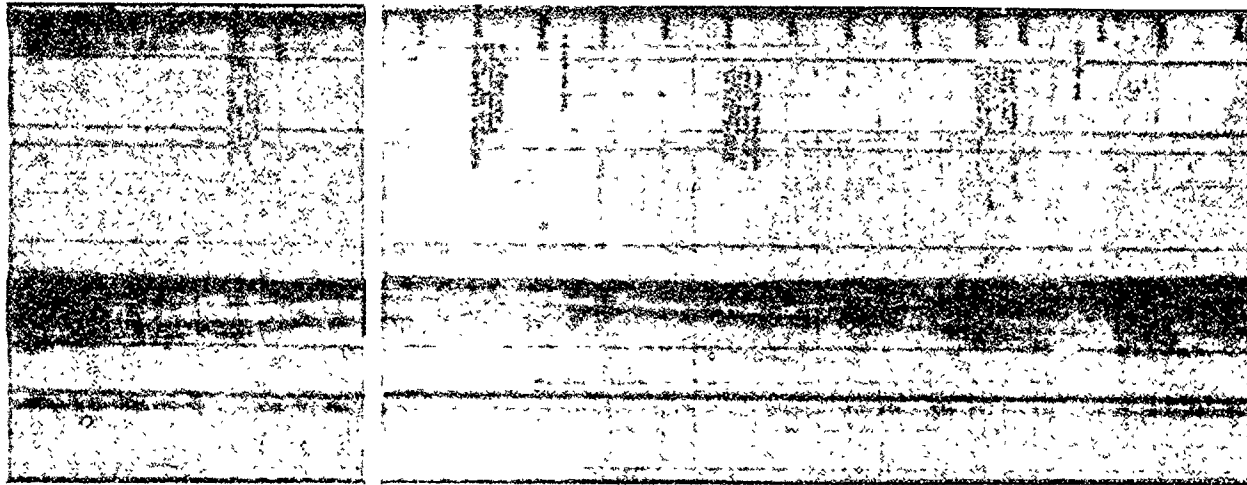
← 254°



0600Z

JD 273

1800Z



INDEX CHART (PLATES 9A, 9B, 9C)

V'

JD 172 1977

0330Z

02°58.8' S

047°27.8' E

0

CRUISE 343728

SECONDS
5

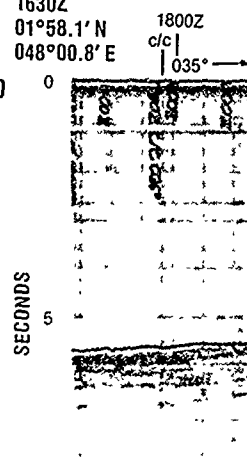
10

PLATE 9B

M

JD297 1979
1630Z
01°58.1' N
048°00.8' E

CRUISE 343920



10

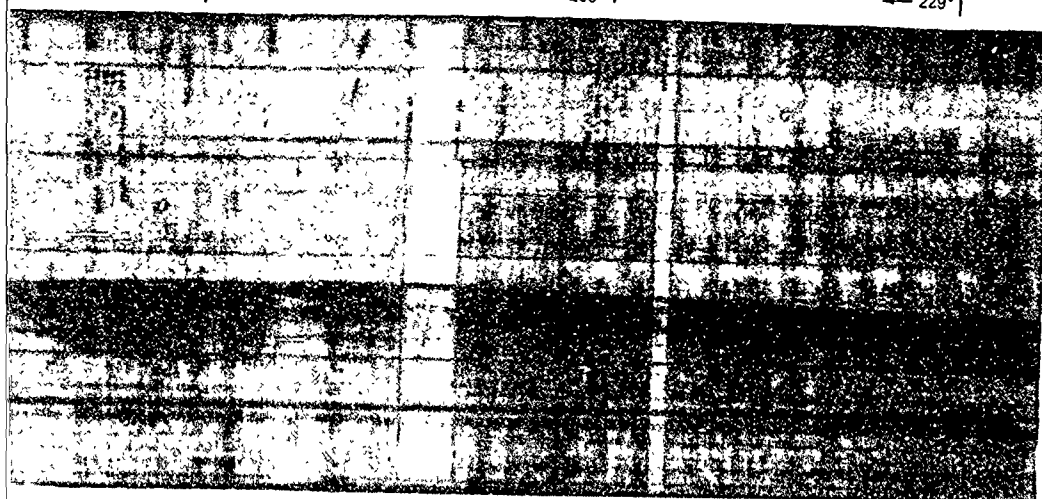
1800Z

1200Z

0600Z

← 238°

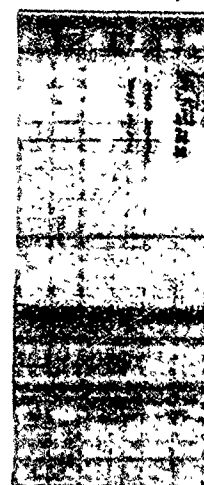
← 229°



JD 272

c/c

← 239°



V'

JD 172 1977
0330Z
02°58.8' S
047°27.8' E

JD 172

c/c

1800Z

← 178°

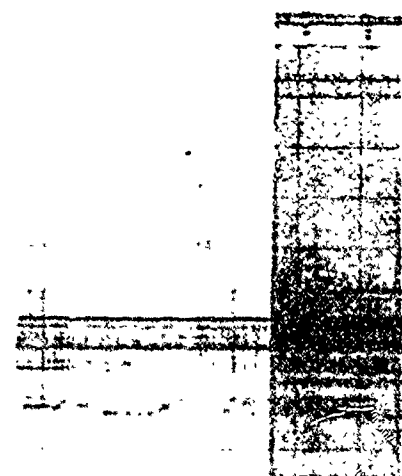
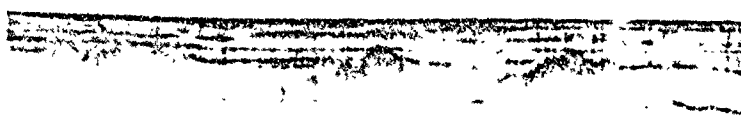
1200Z

c/c

← 200°

CRUISE 343728

SECONDS
5

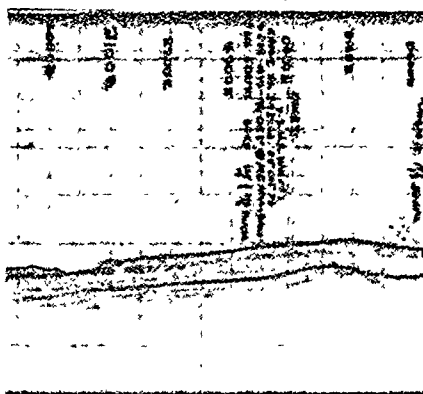


10

K

JD 298 1979
0724Z
02°58.3' N
048°58.9' E

JD 298



E

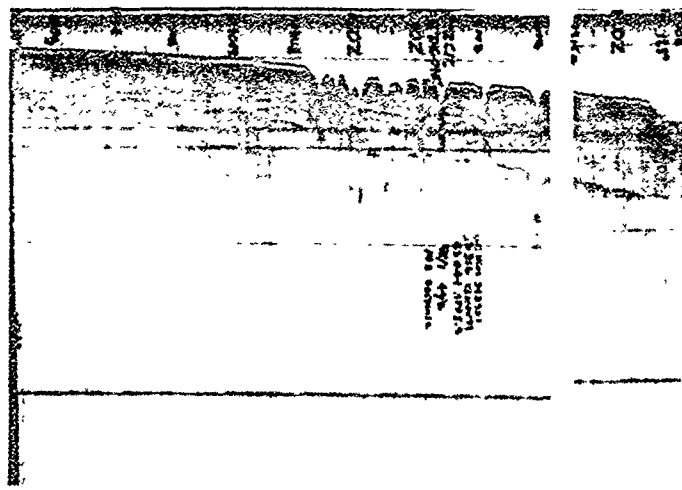
JD 316 1979
0428Z
07°06.0' N
049°48.8' E

0600Z

036°

1200Z

SECONDS
5
10



B

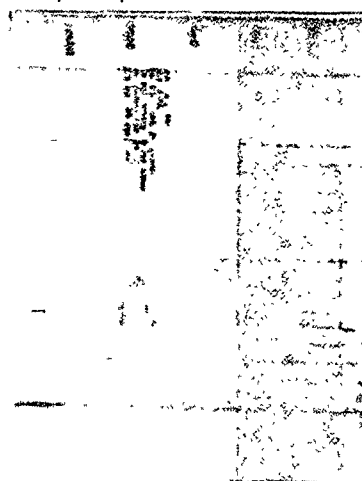
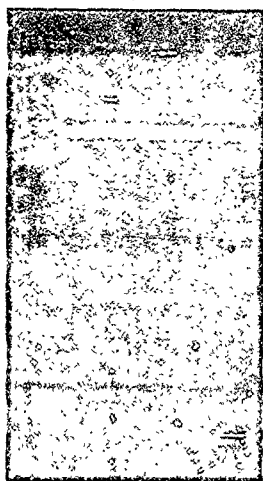
JD 316 1979
1500Z
08°17.0' N
050°39.3' E

1800Z

c/c

1200Z

← 234°

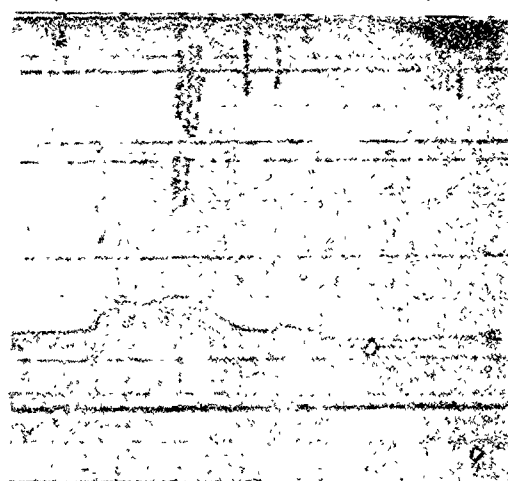


0600Z

JD 271

c/c

← 224°



1800Z c/c

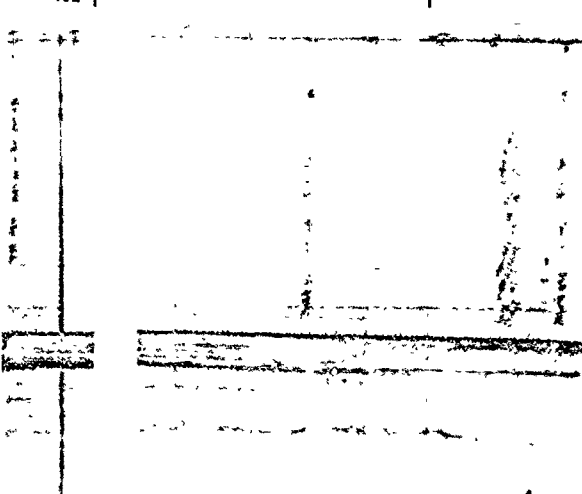
← 210°



c/c

← 192°

1800Z



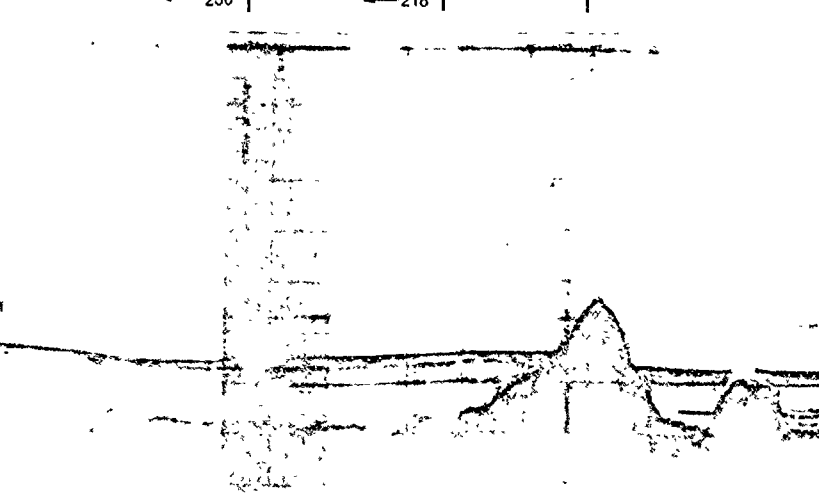
1200Z c/c

← 230°

c/c

← 218°

0600Z

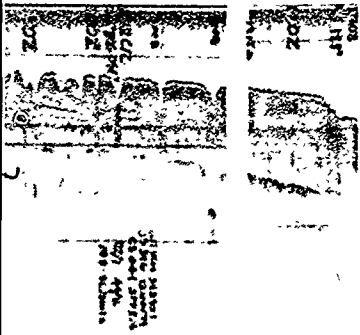


343921

B

JD 316 1979
1500Z
08°17.0' N
050°39.3' E

1200Z



Y'

JD 269 1979
1827Z
08°24.1' N
054°21.6' E

JD 271

← 224° c/c

1800Z c/c
← 210°

c/c

← 274°

c/c

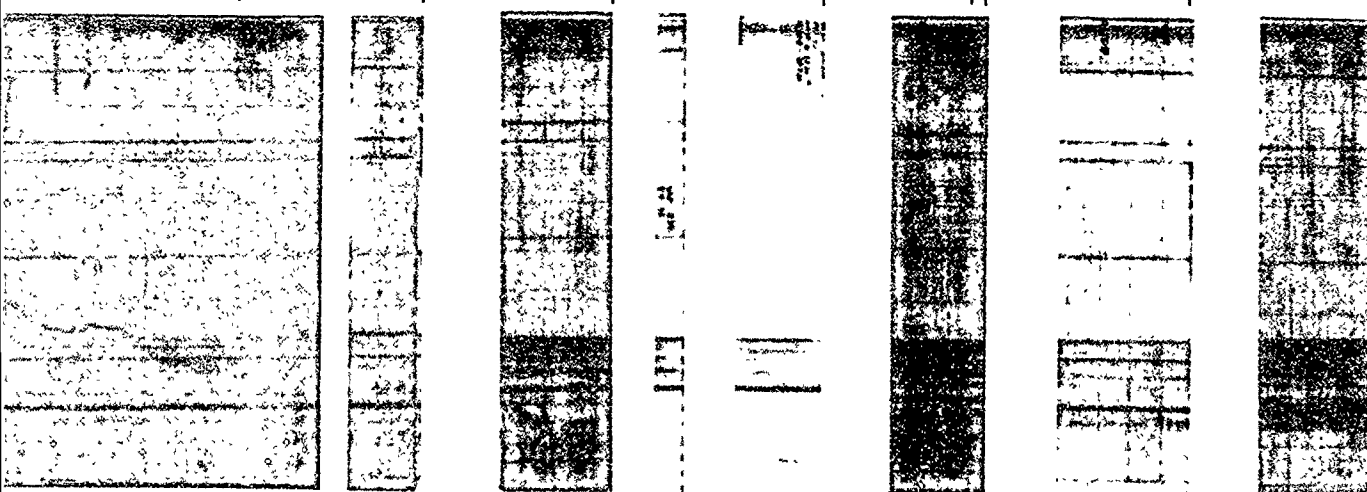
← 195°

JD 270 c/c
← 200°

c/c

← 183°

← 214°



JD 169 1977
1607Z
02°06.4' N
050°43.3' E

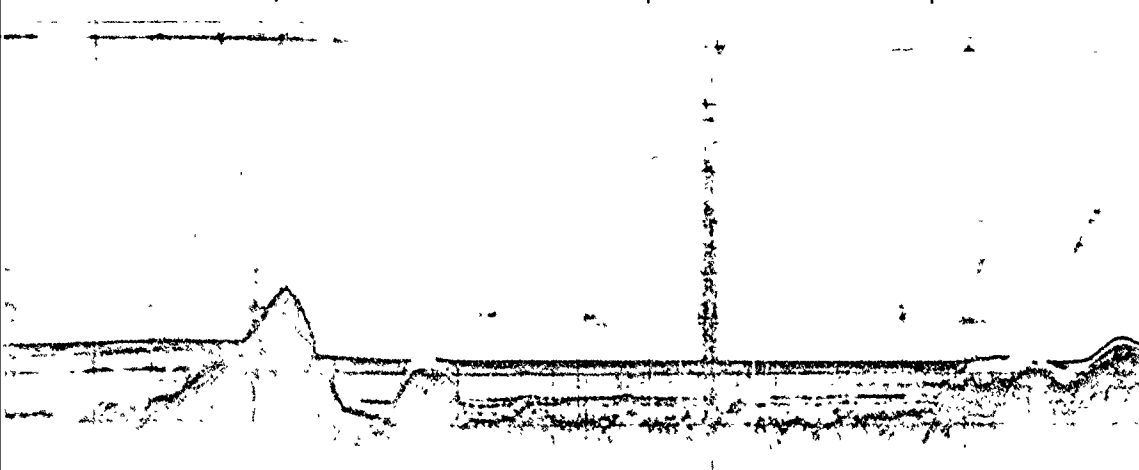
← 218° c/c

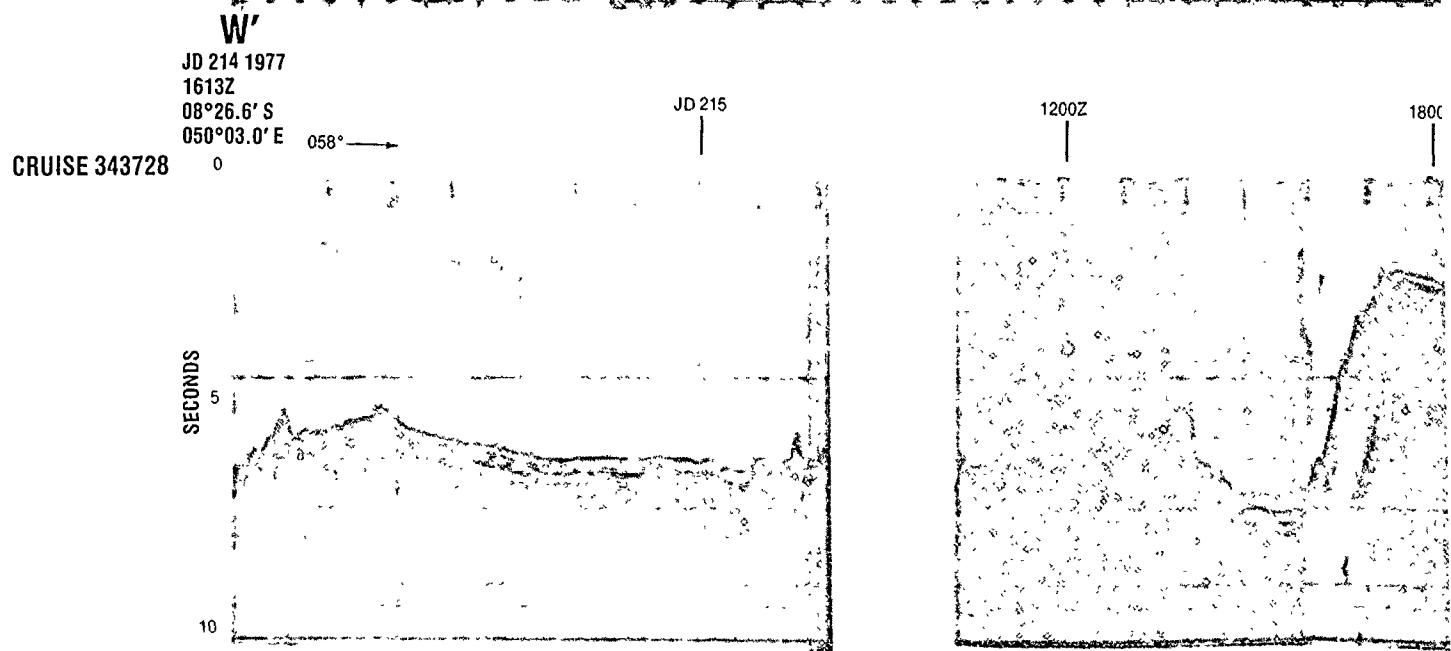
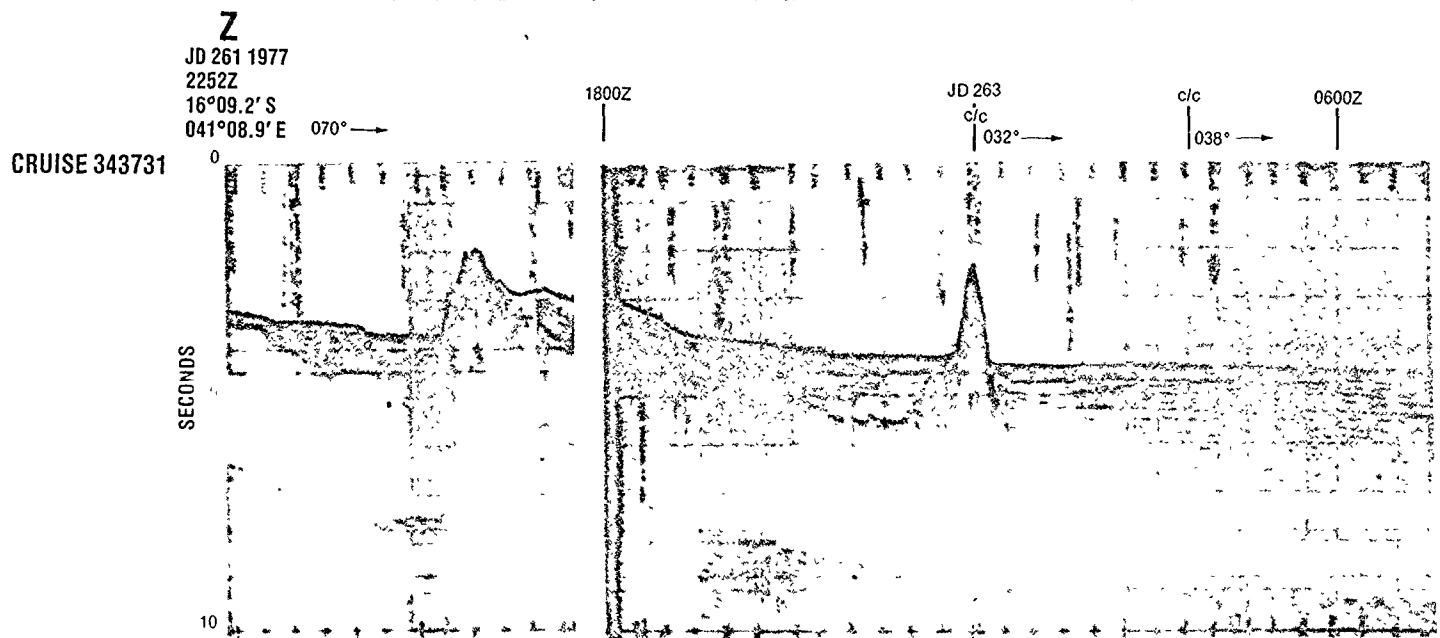
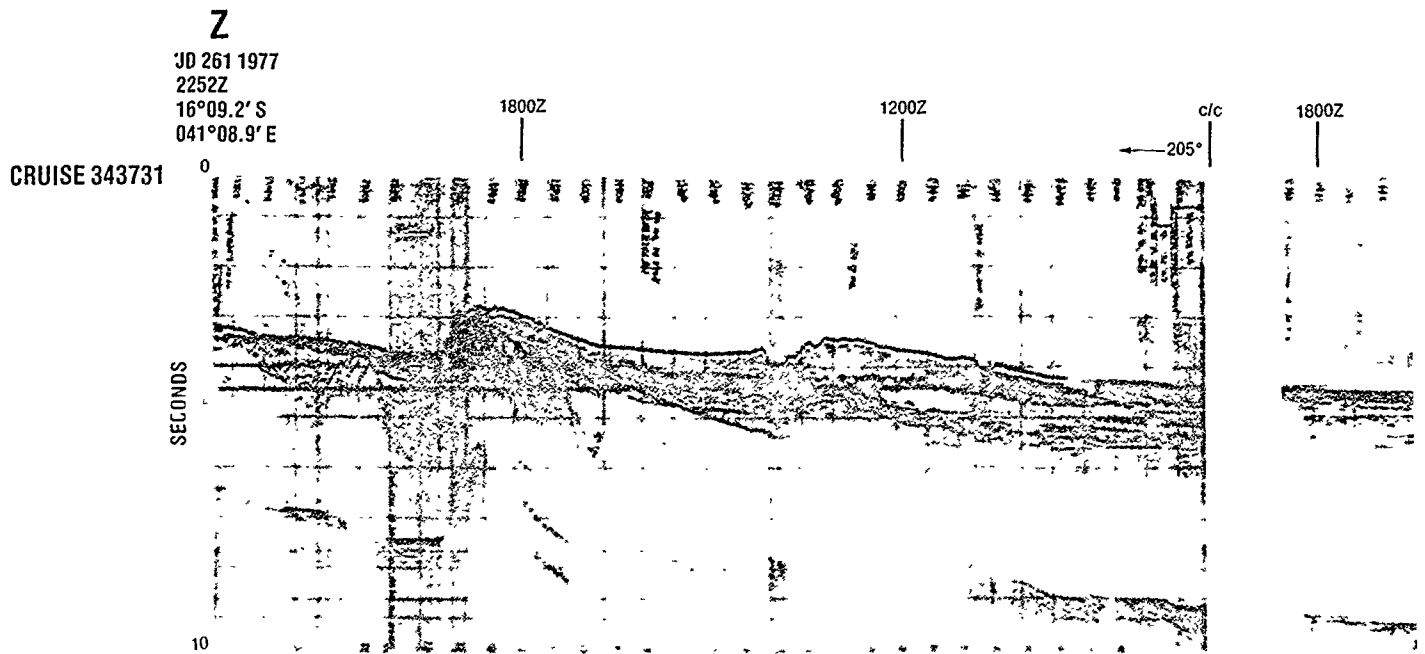
0600Z

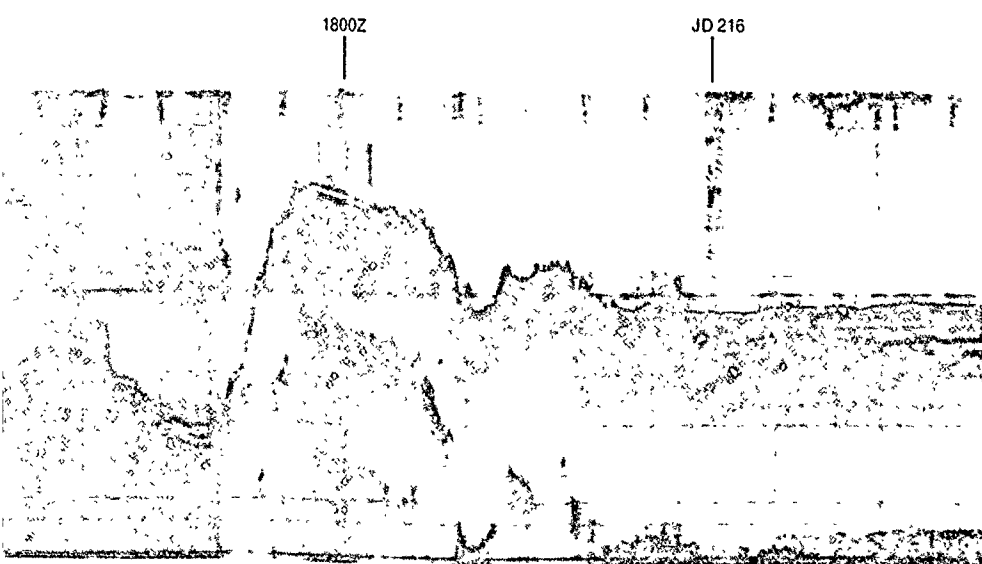
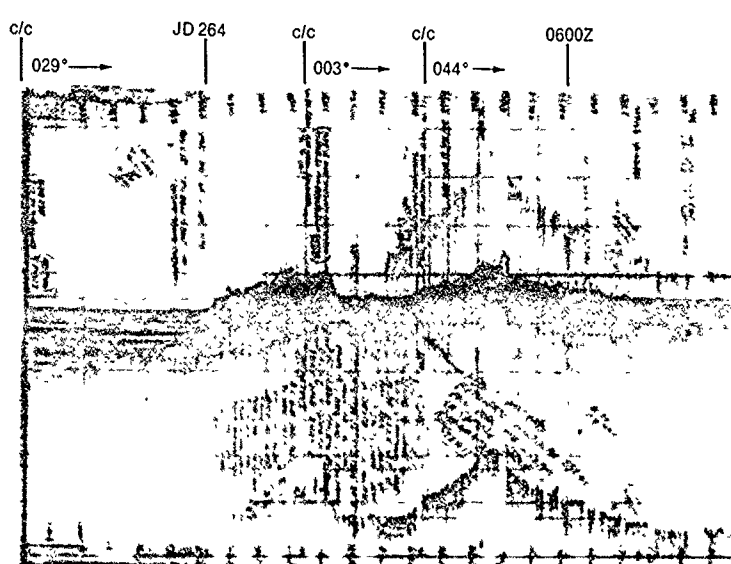
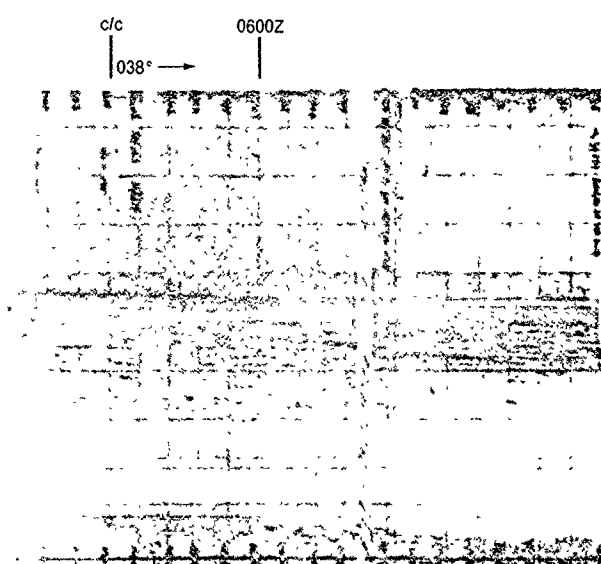
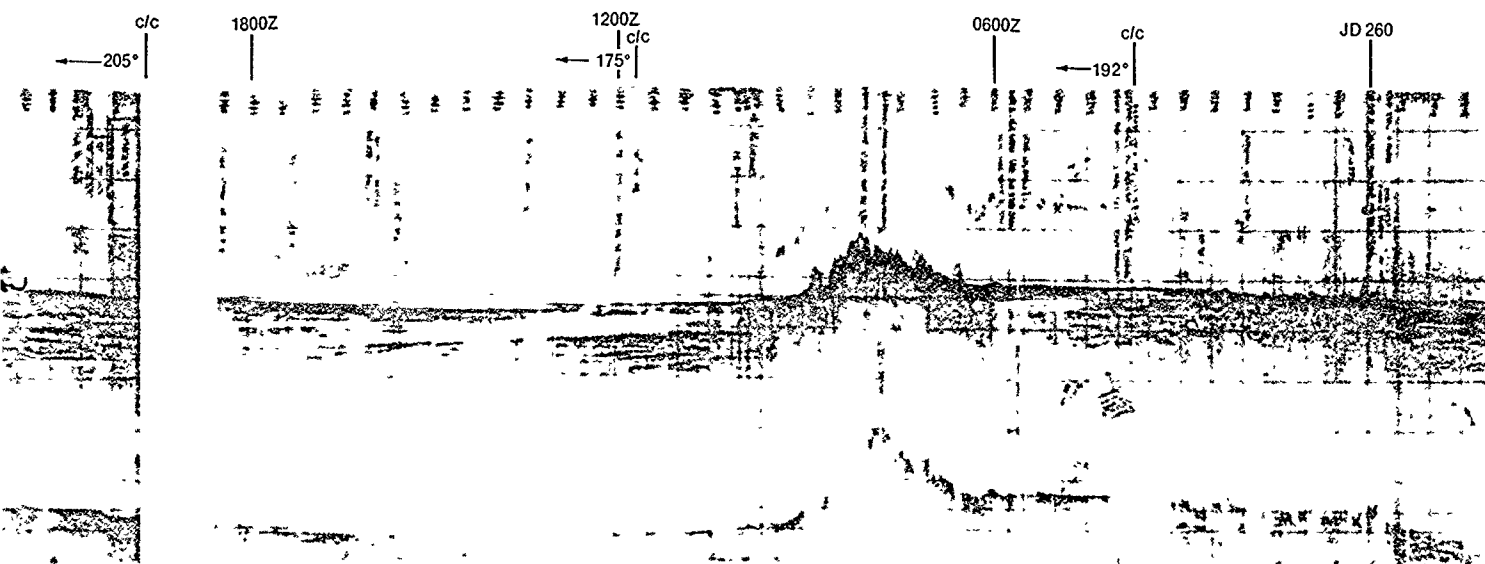
JD 170

← 232° c/c

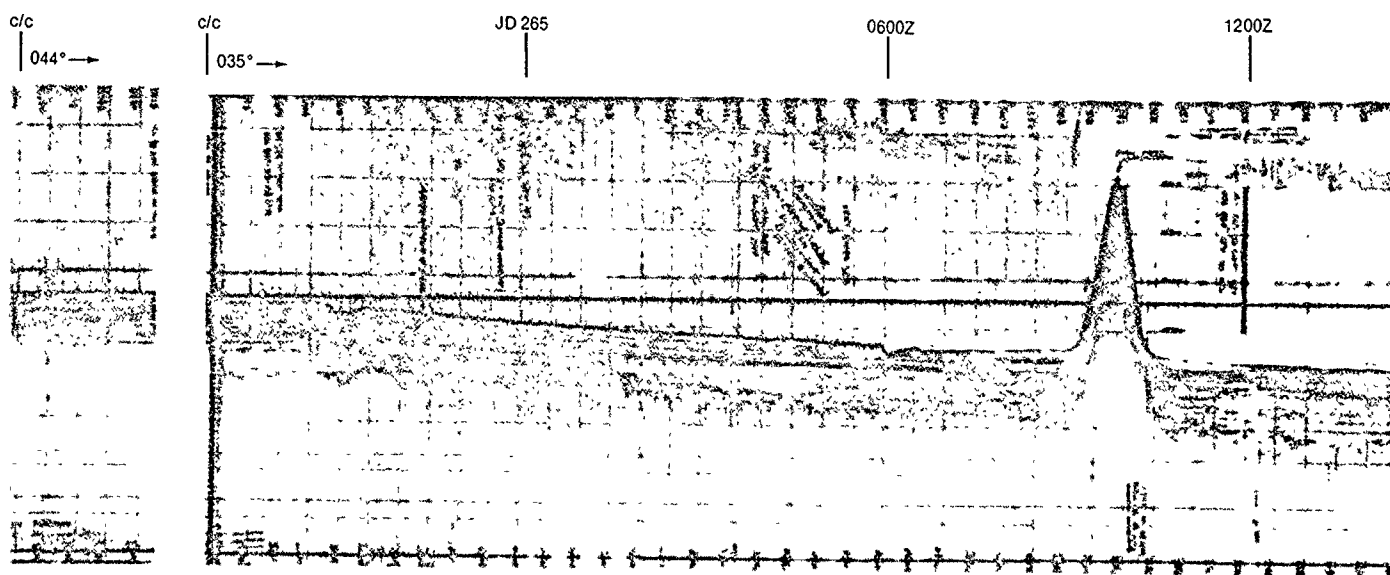
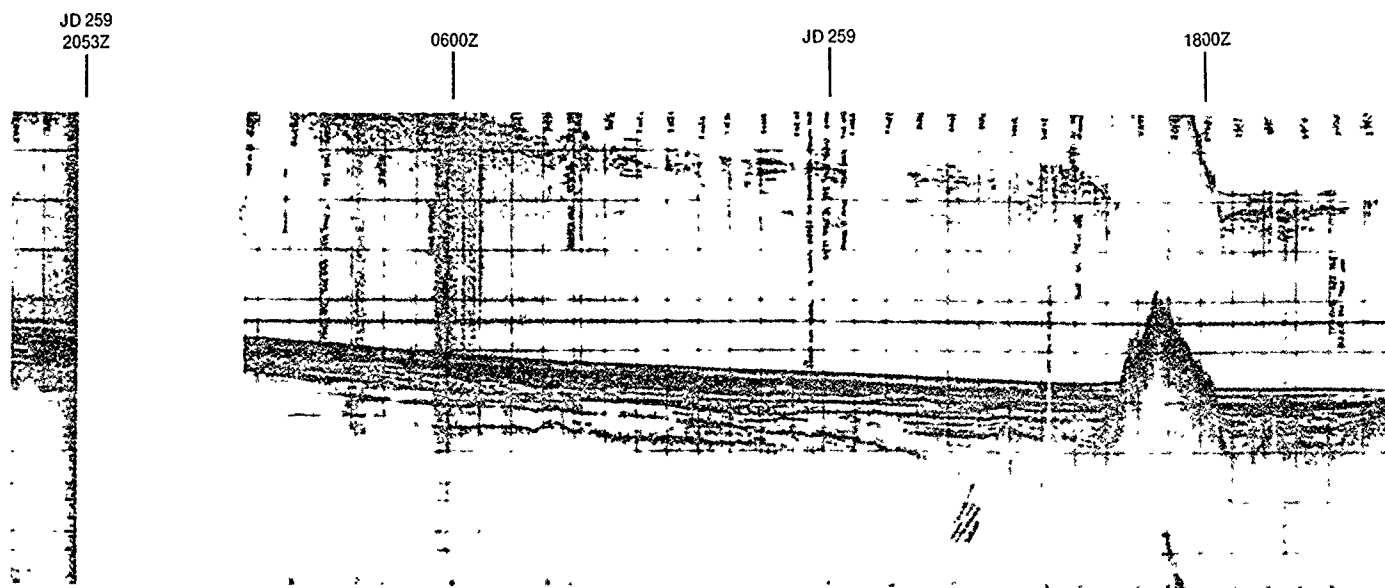
← 197° 1800Z







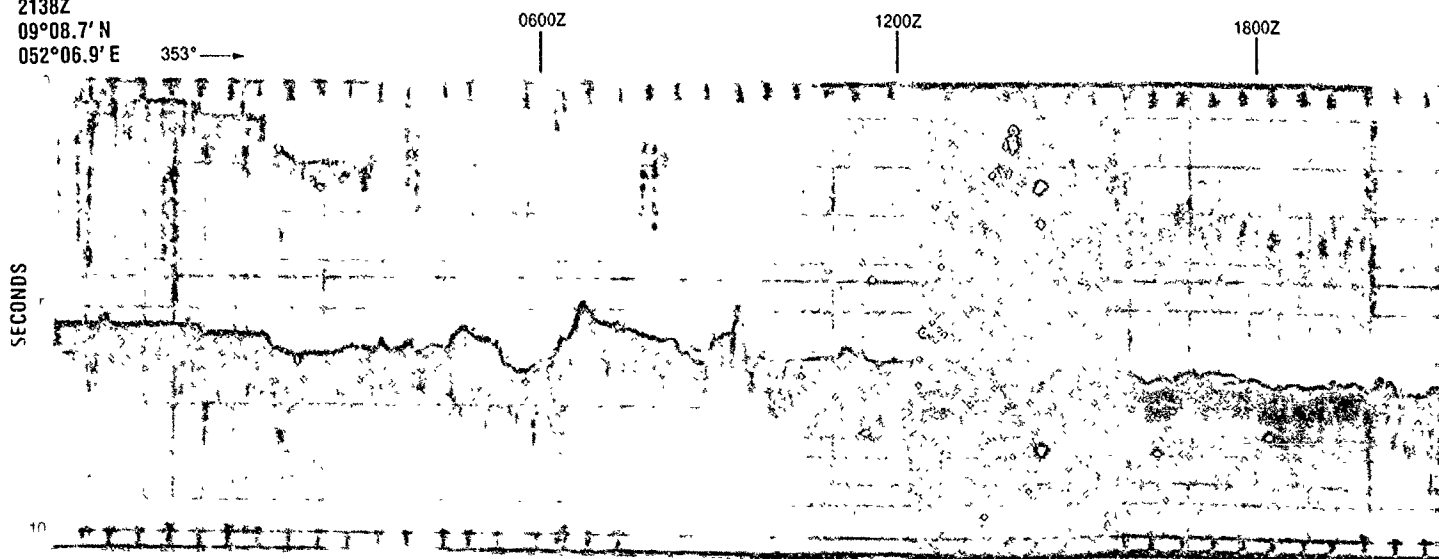
W"
 JD 216 1977
 1435Z
 04°57.6' S
 054°52.0' E

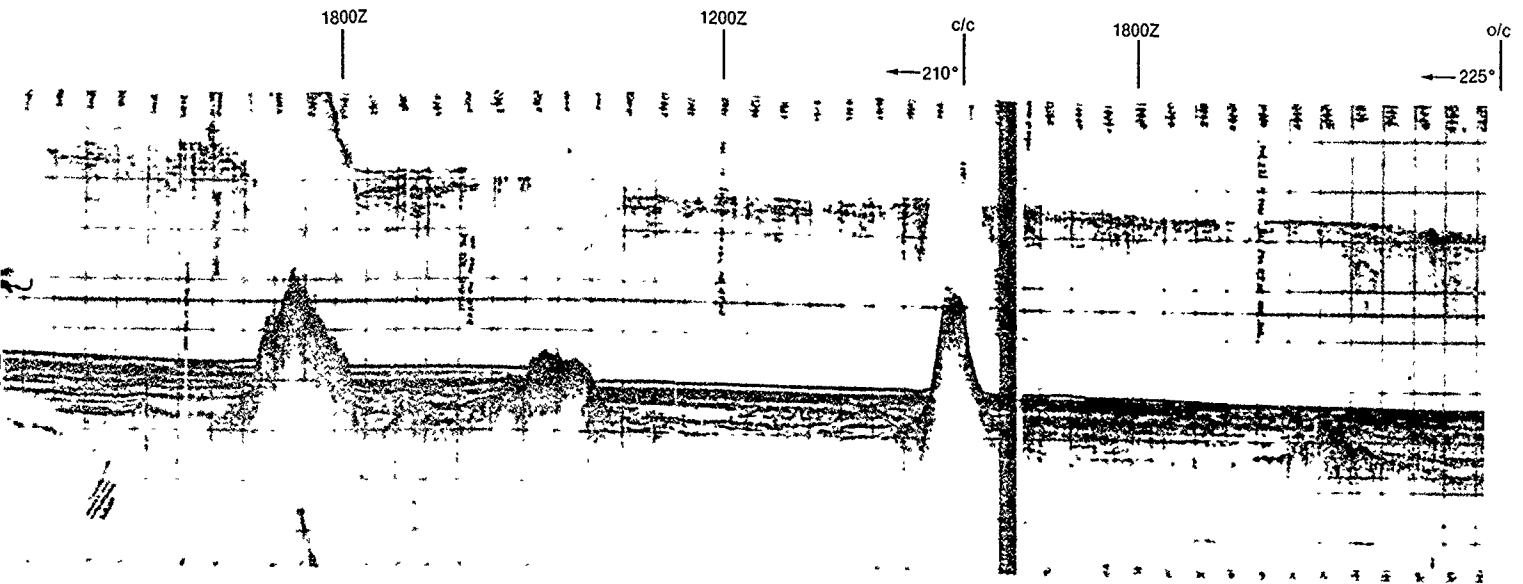


BB

JD 253 1977
2138Z
09°08.7' N
052°06.9' E

CRUISE 343731





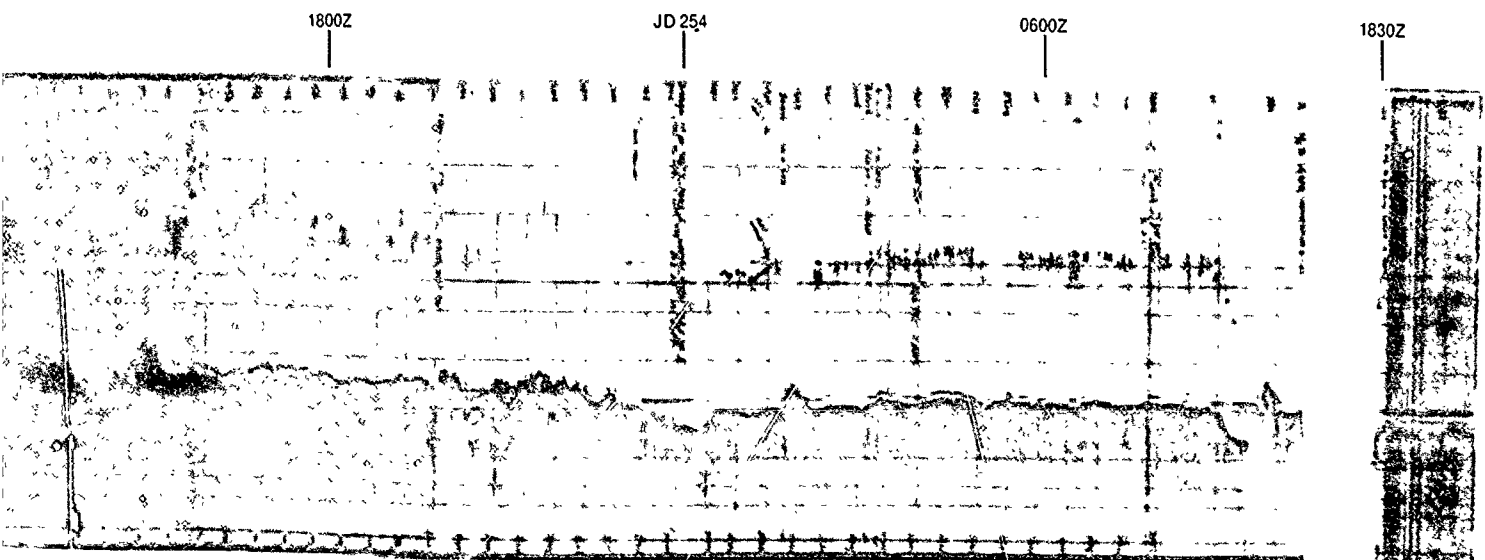
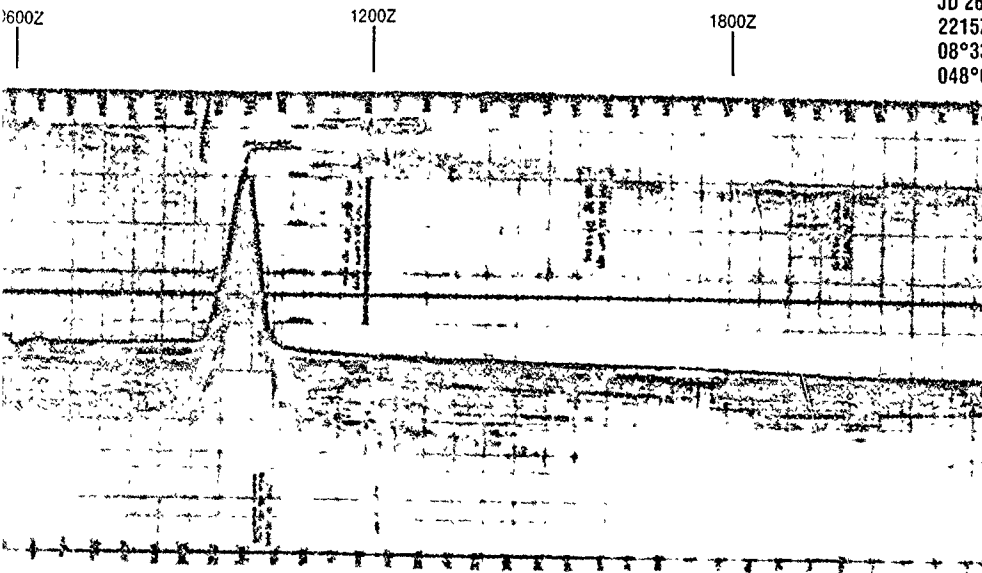
X'

JD 265 1977

2215Z

08°33.0' S

048°08.0' E



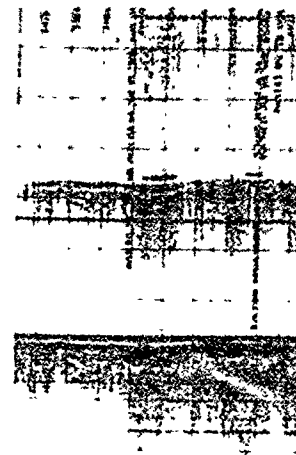
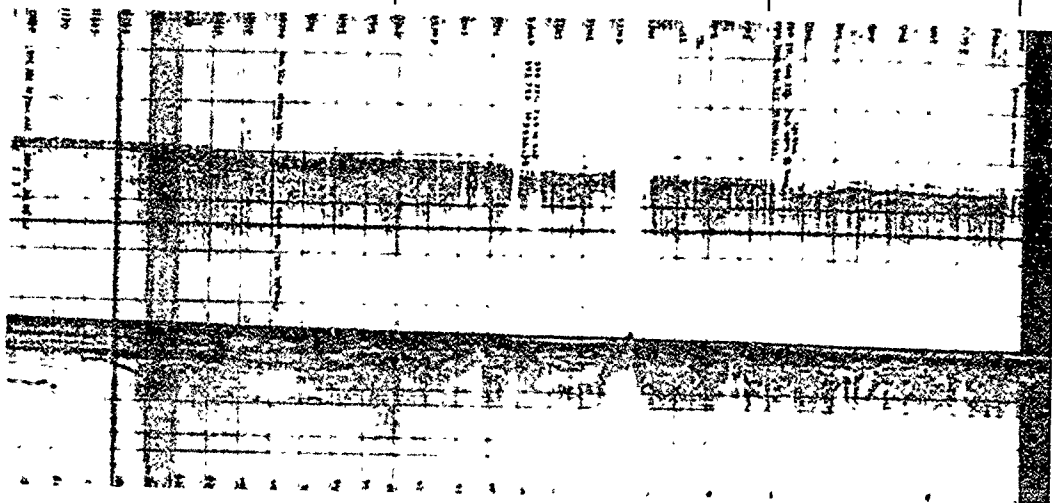
1200Z

0600Z

JD 257

2000Z

JD 256



Z'

JD 255 1977

0730Z

00°19.5' N

051°06.0' E

JD 255

0600Z

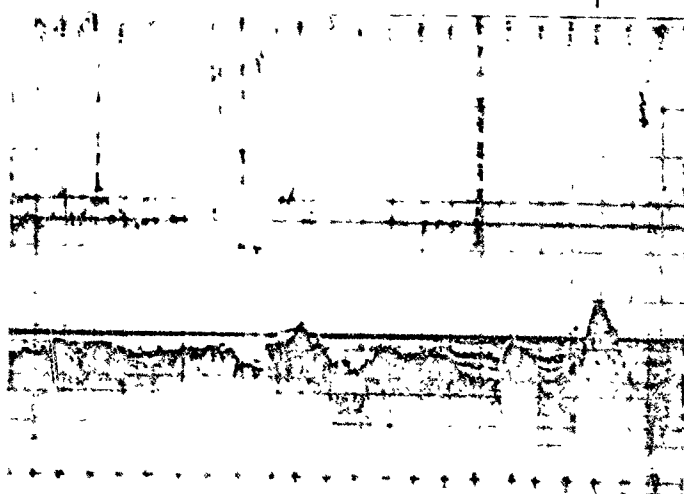


PLATE 10C

Z'

JD 255 1977
0730Z
00°19.5' S
051°06.0' E

2000Z

JD 256

1800Z

c/c

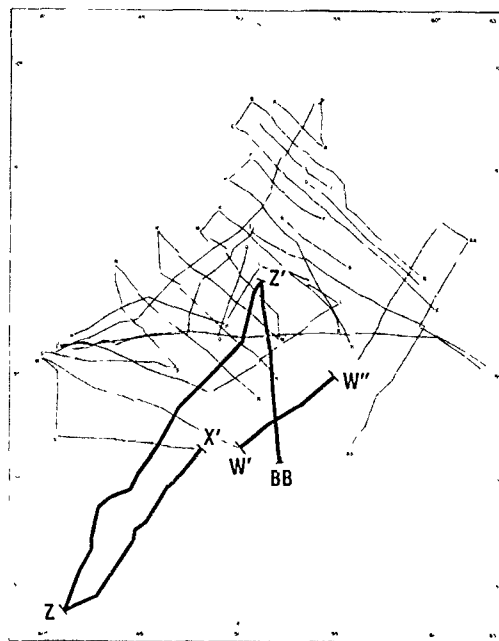
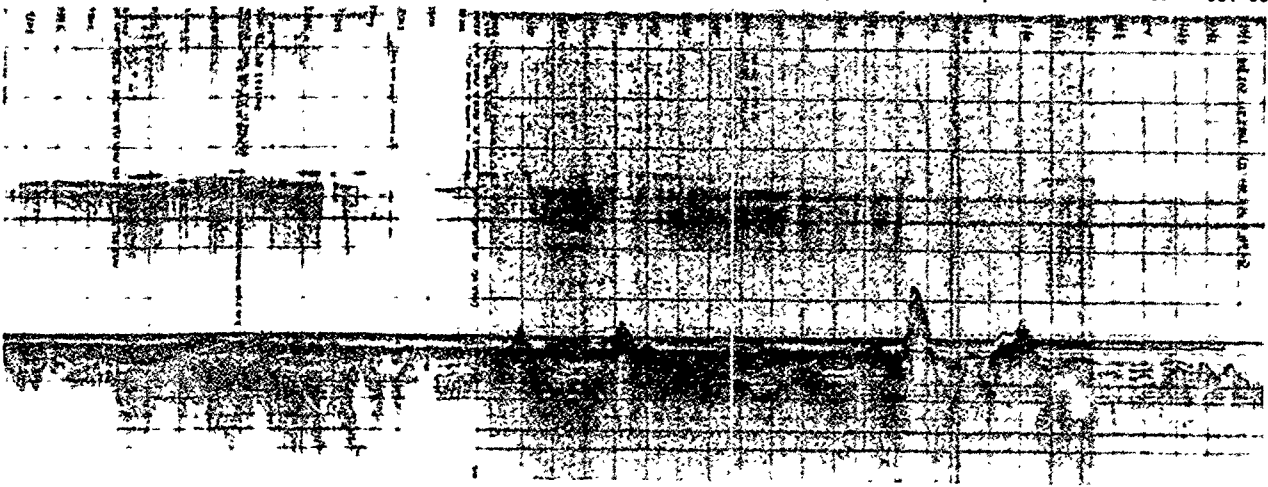
c/c

1200Z

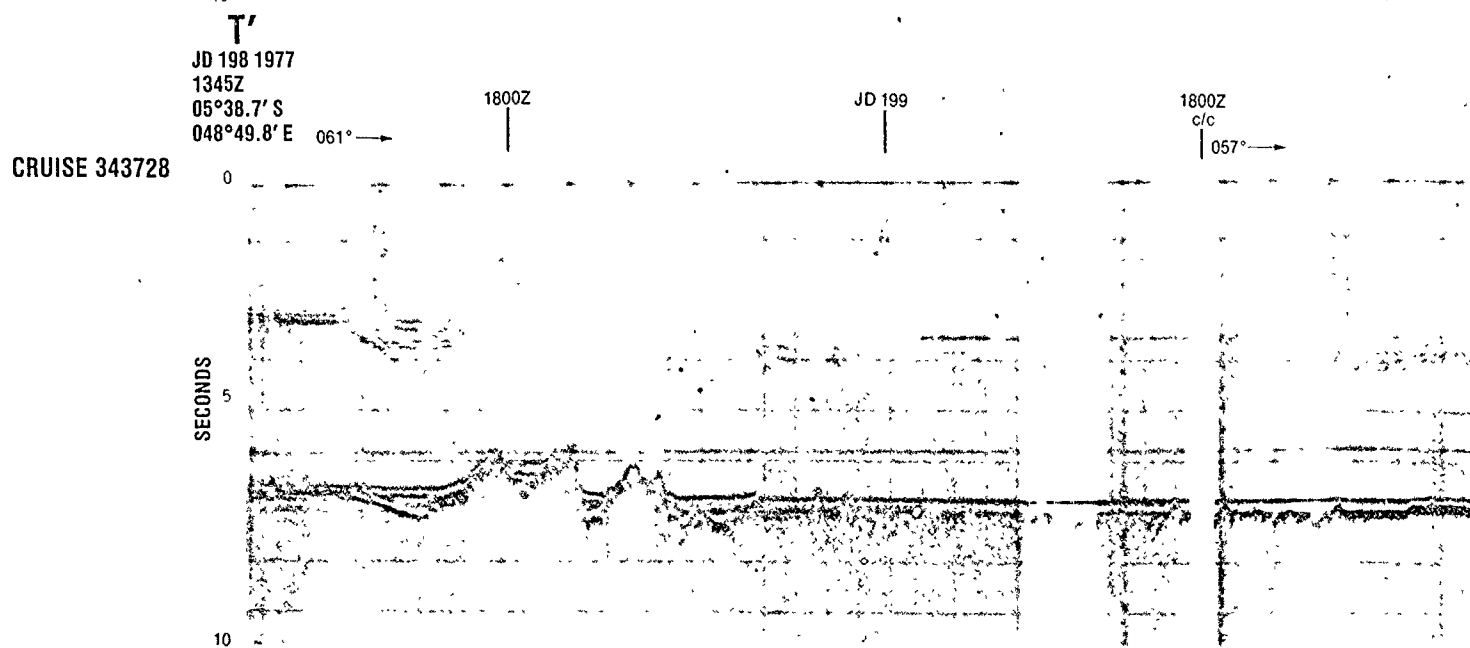
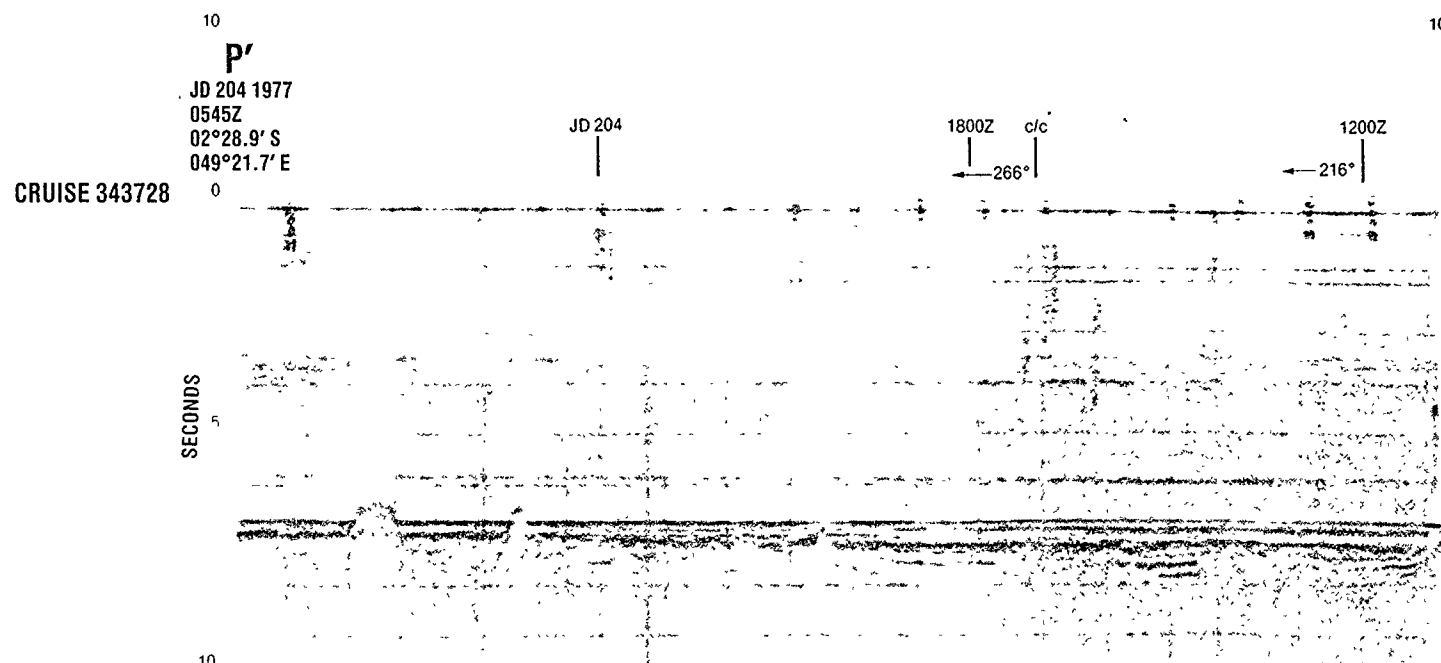
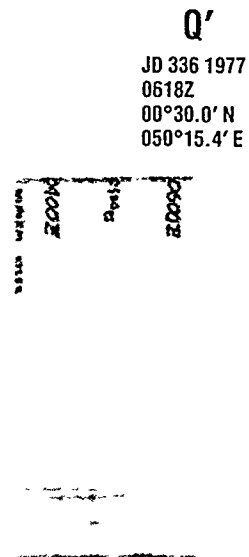
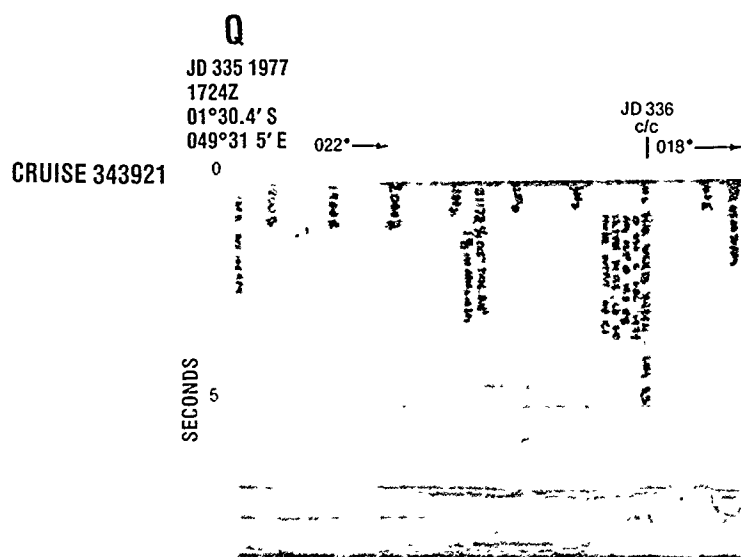
← 225°

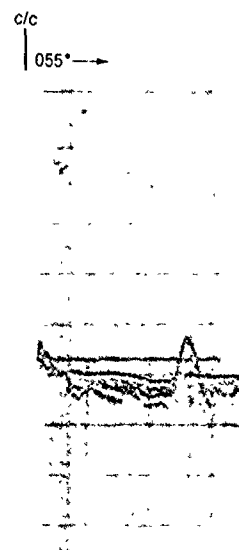
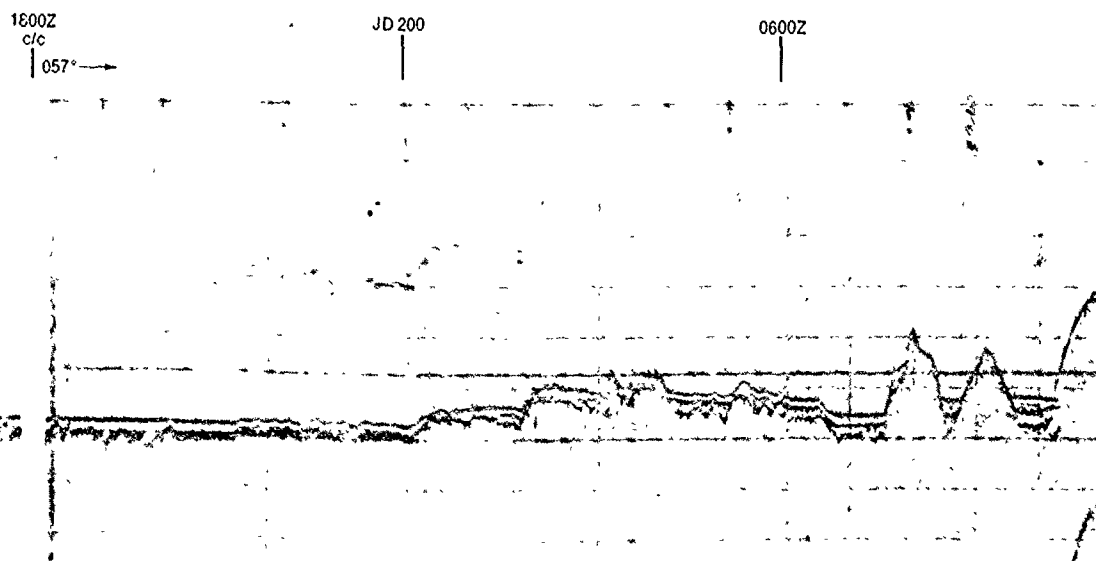
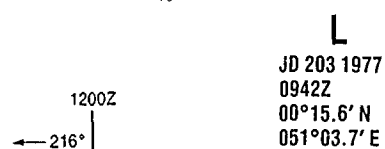
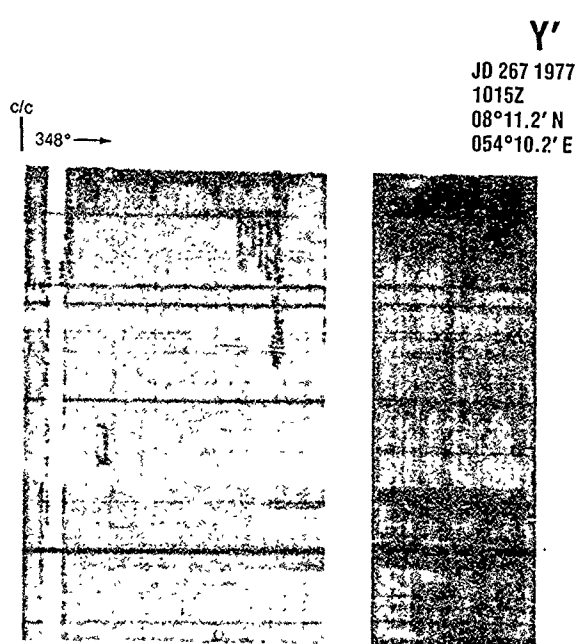
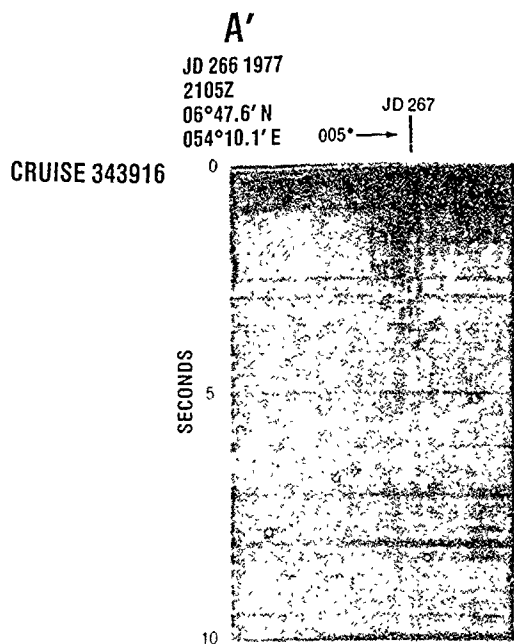
← 192°

← 199°



INDEX CHART (PLATES 10A, 10B, 10C)

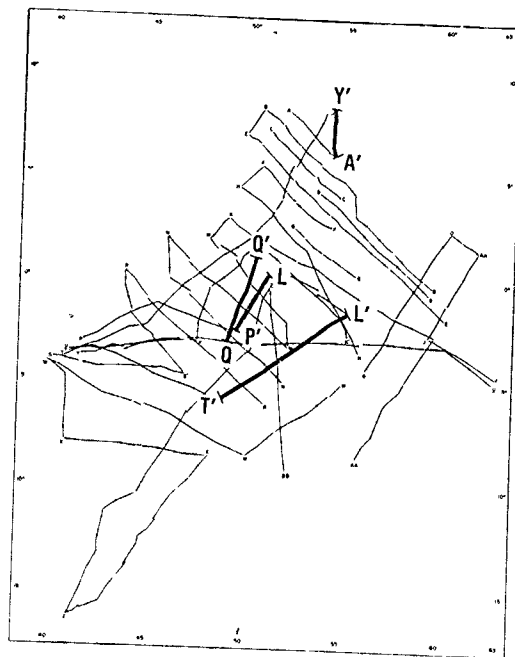




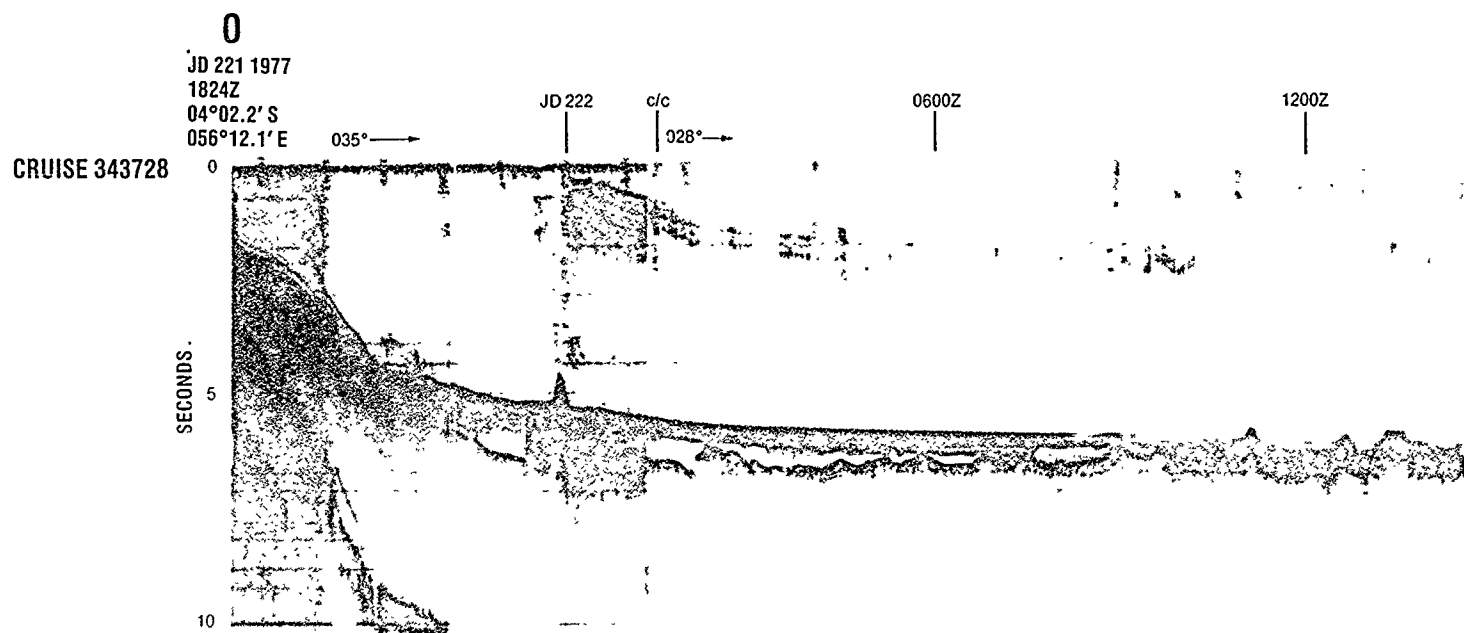
JD 201
c/c | 064° →

L'
JD 201 1977
0600Z
01°33.4' S
054°58.3' E

PLATE 11B



INDEX CHART (PLATES 11A, 11B)



CRU

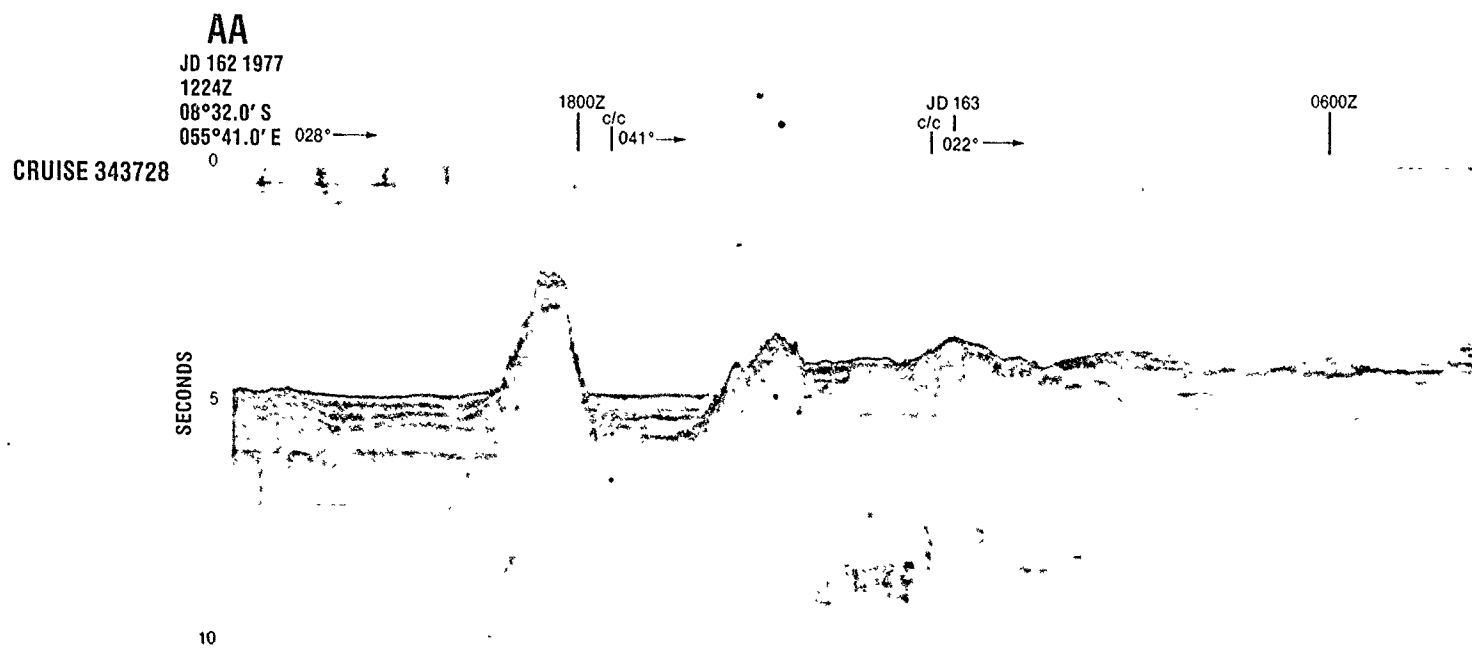


PLATE 12A

1200Z

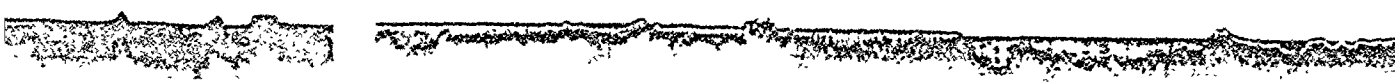
c/c

035° →

1200Z

1800Z

JD 223 1977
2251Z
00°14.6' N
058°48.9' E



J

JD 227 1977
2024Z
02°34.9' S
059°13.0' E

CRUISE 343728

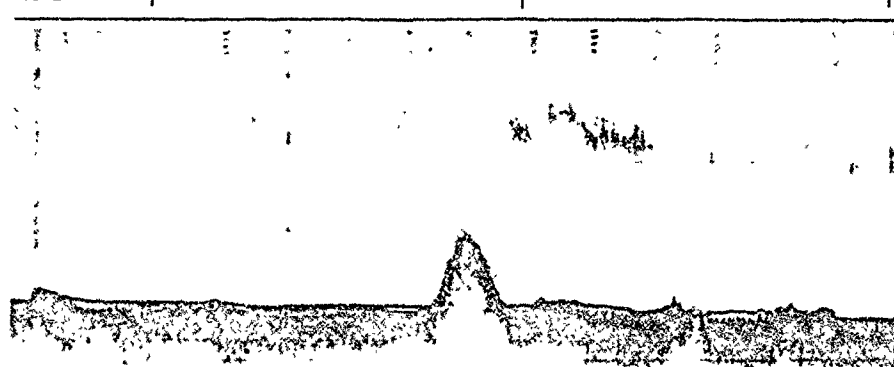
1800Z

1200Z

0600Z

SECONDS

10



0600Z

c/c

046° →

1200Z

1800Z

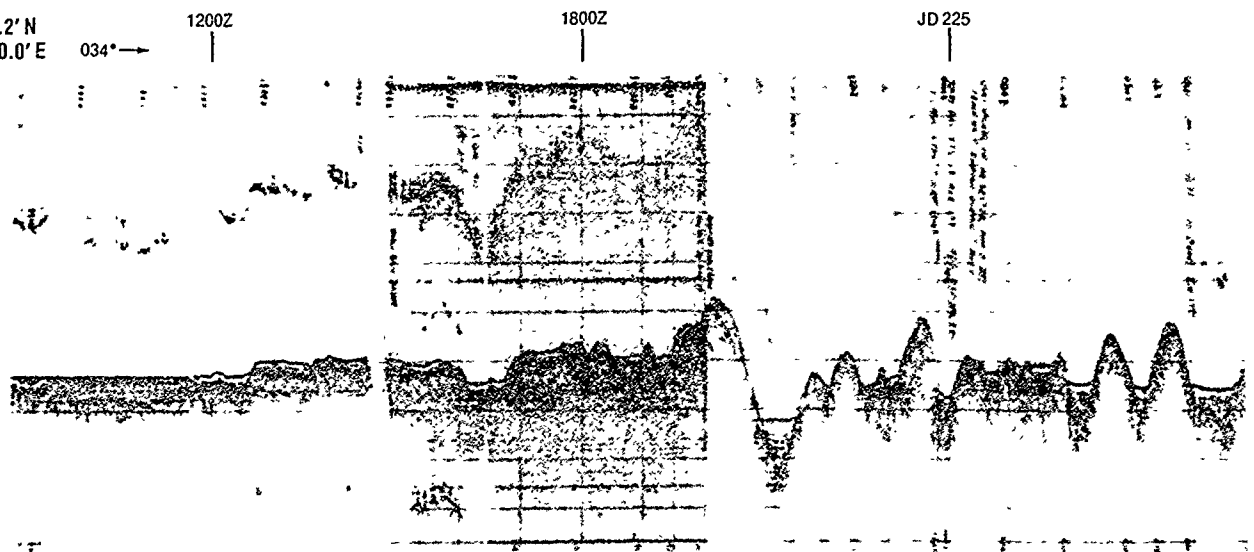
c/c

028° →

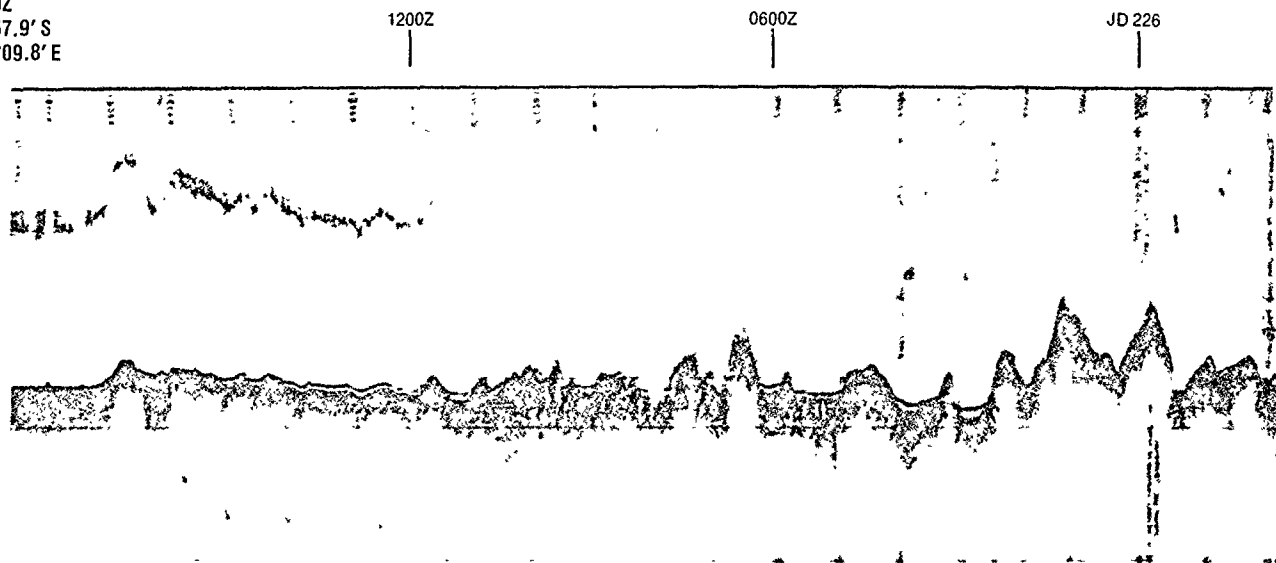
JD 163 1977
2231Z
04°48.5' S
058°02.5' E



JD 224 1977
0845Z
00°25.2' N
058°50.0' E



JD 226 1977
1830Z
00°57.9' S
060°09.8' E



JD 164 1977
0826Z
04°29.9' S
058°13.8' E

035° →

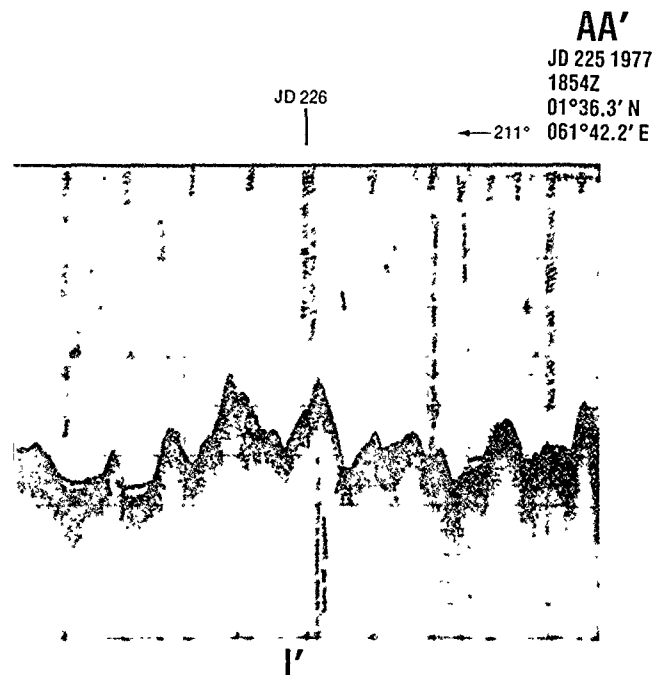
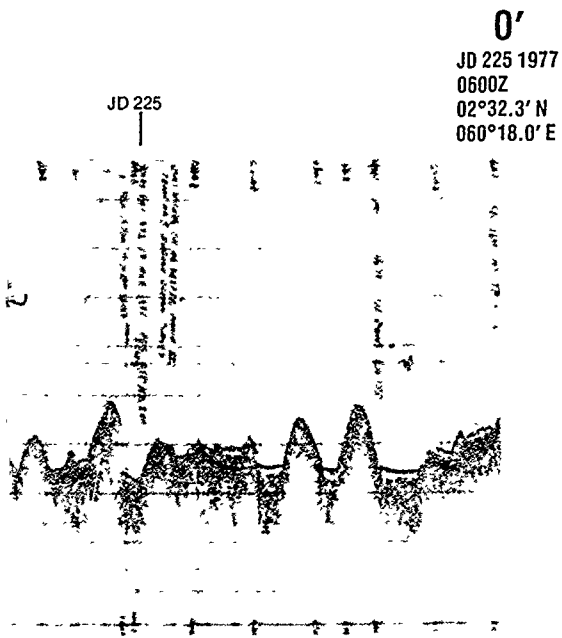
1200Z

1800Z

JD 165

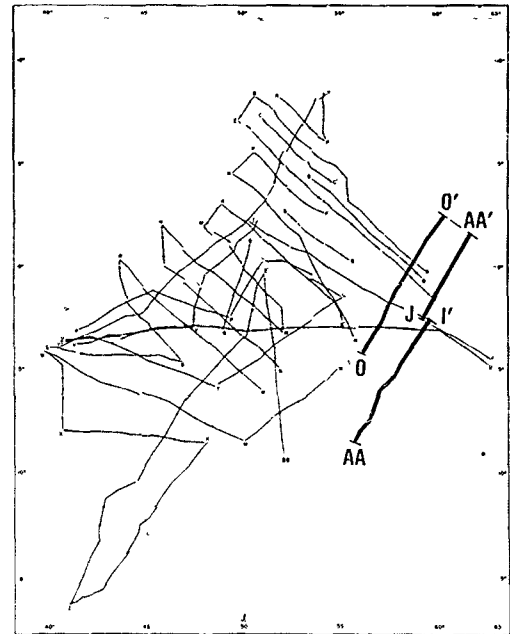
JD 165 1977
0200Z
02°33.2' S
059°32.3' E





JD 165 1977
0200Z
02°33.2' S
059°32.3' E

JD 165



INDEX CHART (PLATES 12A, 12B)

TR 300

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